

Do You See What I See: The Influence of Self-Objectification on Appearance Anxiety,
Intrinsic Motivation, Interoceptive Awareness, and Physical Performance

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Abstract

Objectification theory suggests that when individuals take on an observer's perspective of their physical appearance (known as self-objectification), they experience an increase in body shame and anxiety and a decrease in motivation and bodily awareness. The purpose of this study was to determine if self-objectification could impact social physique anxiety, intrinsic motivation, and bodily awareness as well as physical performance.

Undergraduate female students (N=54) were recruited to participate in a Consumer Behaviour study (cover story). Participants were randomly assigned to a swimsuit or sweater condition, completed cover story and body image measures, changed into the clothing based upon randomization, then completed state body image measures and performed a series of balance tasks. Women in the swimsuit group experienced greater state self-objectification and reported greater amounts of body-related shame and appearance anxiety and lower amounts of intrinsic motivation. In addition, self-objectification led to restricted arms, trunk, and leg movements during a 1-leg stand. Findings could have implications for promoting positive experiences during physical activity, such as sport, exercise or rehabilitation settings.

Keywords. Self-objectification, interoceptive awareness, intrinsic motivation, anxiety, performance

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CHAPTER 1: REVIEW OF LITERATURE

1.1 Body Image

Body image can be defined as a person's internal perspective of his/her outer appearance (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). It includes perceptions (how accurately one views the body) and attitudes towards the body's appearance and functioning (Cash, 2004). These body-related attitudes can include one's thoughts/cognitions (e.g., thinking your thighs are big), feelings (e.g., feeling embarrassed about your body) and behaviours towards the body (e.g., exercise). While these attributes can range from positive to negative, most people, particularly women and girls in western countries, report negative body image (Strachan & Cash, 2002).

Negative body image is defined as being dissatisfied, concerned or worried about one's physical appearance or a specific body part (Thompson et al., 1999). Body dissatisfaction occurs when people are not happy with their appearance and/or believe they are not able to match their physical appearance to the ideal created by society (Vartanian & Dey, 2013). A survey conducted by Garner (1997) reported that 56% percent of women said they were dissatisfied with their physical appearance and 89% percent of women expressed interest in losing weight. In addition, consequences of negative body image were found among women who participated in the survey. Eighty-four percent of women reported dieting to lose weight, 13% of women induced vomiting, and 14% of women were diagnosed with a clinical eating disorder (Garner, 1997). Much of this body dissatisfaction and desire to lose weight is based on the discrepancy many women perceive to exist between their body and the ideal. Recently, Fallon, Harris, and

Johnson (2014) conducted an investigation of the prevalence of body dissatisfaction among adult men and women and reported that 13.4% - 31.8% of women expressed body dissatisfaction, compared to 9.0% - 28.4% of men.

1.1.1 The Female Ideal. The female ideal is thin with medium sized breasts and a narrow waist (Overstreet, Quinn, & Agocha, 2010). The thin-ideal, representing societal standards of what is considered 'beautiful', is impossible for most women to achieve (Pidgeon & Harker, 2013). Many women internalize the ideal, meaning they adopt it as their own value and belief (Pidgeon & Harker, 2013). As a result, many women try to achieve the thin ideal by any means possible. Fashion and beauty magazines are a prime source of information on the thin ideal for women (Tiggemann & Polivy, 2010). Research has shown that the thin physique as portrayed in the media has actually become thinner over time (Evans, 2003). Consequently, many women engage in unhealthy behaviours in an attempt to achieve the ideal, including atypical eating behaviours (e.g., dieting and dietary restraint) that may lead to the development of clinical eating disorders. In addition, negative psychosocial experiences occur, such as body shame, depression and anxiety, as well as dissatisfaction with current shape, weight and size (Pidgeon & Harker, 2013). Fallon et al., (2014) compared body dissatisfaction results from their study to studies conducted in the 1980's-1990s. The researchers concluded that the prevalence of body dissatisfaction in the U.S. among adults has plateaued or slightly decreased over time (Fallon, 2014); however, there are still a significant number of women who believe they do not meet the female ideal.

Several theories have been applied to understand body image and the influence of the ideal, and particularly the negative body image that is so common in North America.

According to sociocultural theory, which has been applied most often, women's dissatisfaction is a result of the narrowly defined impossible to achieve Western ideal of beauty (i.e., the thin ideal), treating the body as an object, and the assumption that being physically attractive leads to rewards (e.g., job promotions; Morrison, Kalin, & Morrison, 2004). Social comparison theory (Festinger, 1954) has also been used frequently; it suggests that individuals have a drive to evaluate and compare their abilities and appearance to others including the ideal, and in that process of comparing one's body to the ideal, negative body image occurs. In addition, objectification theory (Fredrickson & Roberts, 1997) has been used to understand negative body image in women, as well as the thoughts, feelings and behaviours that follow. Objectification theory provides a different insight into the outcomes and implications of negative body image, however it has not been fully explored.

1.2 Objectification Theory

Objectification theory was originally developed to understand the negative experiences and behaviours of women and girls, and specifically white women and girls. Objectification theory suggests that girls and women in western societies are treated as objects or things, rather than as people. In particular, women become valued for their physical appearance and their bodies are often considered separate from their minds (Fredrickson & Roberts, 1997). By contrast, men are valued for their minds. Further, for women, the body is typically looked at not as a whole, but rather as a collection of body parts for the sole purpose of being used by others (Fredrickson & Roberts, 1997). As a result of this objectification, women come to believe that they exist to be used by others

(Calogero, Tantleff-Dunn & Thompson, 2011). The model below presents a road map through objectification theory (see Figure 1).

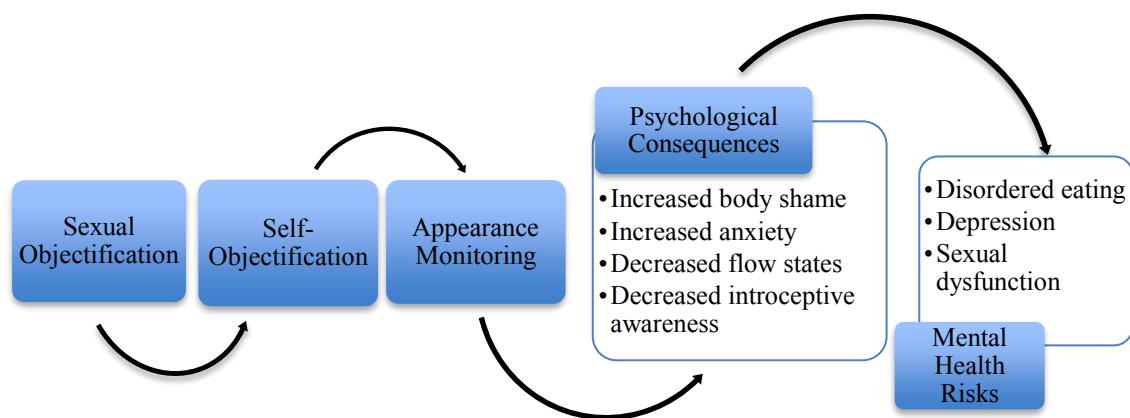


Figure 1. Process and consequences of self-objectification (adapted from Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998).

1.3 Sexual Objectification

According to objectification theory, women are often treated as sexual objects to be used by men, a process termed sexual objectification (Fredrickson & Roberts, 1997). There is significant evidence that women experience more sexual objectification than men. The most subtle way women can experience sexualization is through the simple act of others gazing and visually inspecting their bodies (Fredrickson & Roberts, 1997). Studies have shown that in social settings women are gazed at more frequently than men and this gaze is often followed by a derogatory comment (Hall, 1984). This may leave

women feeling uncomfortable and violated through the act of sexual objectification. Some have also argued that women may even treat themselves as sexual objects by wearing revealing clothing, further encouraging sexual objectification to occur (Fredrickson & Roberts, 1997).

Sexual objectification is also obvious in the media. For example, in many print advertisements and commercials, sexual objectification can be seen in how women pose provocatively (e.g., legs open), their clothes (e.g., little or no clothing), and the layout of the ad (e.g., heads are cut off so only the body is displayed). By contrast, men are more often fully dressed, are shown to include their faces (i.e., their identity) and are often in a position of power relative to women in the photographs.

As a result of their sexual objectification, girls and women come to view their bodies for physical appearance rather than for what their bodies can physically do (Fredrickson et al., 1998). Sexual objectification results in women feeling like they do not have the ability to control how, when and where they have the potential to be looked at by others (Fredrickson & Roberts, 1997). According to objectification theory, the result of this sexual objectification of women is self-objectification.

1.4 Self-Objectification

Self-objectification occurs when a person takes on an observer's (or third person) perspective of her physical self, viewing herself as an object rather than a person. As a result, women view themselves as objects to be used by others. Women become preoccupied with their physical appearance (which is observable by others) rather than their non-observable qualities, such as their intelligence or personality. A study

conducted by Huebner and Fredrickson (1999) asked college students to recall situations where they were studying alone, eating in a dining hall, giving a presentation, or being at a co-ed house party. Women were able to recall more observer-oriented memories in all situations (e.g., as if there were a camera mounted to a wall recording them) than men (Huebner & Fredrickson, 1999). These results illustrate how women pay more attention to how an observer views her body in comparison to men across settings that are commonly experienced by university students. As a result of self-objectification and the emphasis placed on physical appearance (e.g., the body) over non-observable qualities (e.g., the mind), women become more likely to engage in appearance monitoring.

It should be noted that self-objectification has been conceptualized as having both trait and state components. Trait self-objectification refers to the general extent to which one self-objectifies across most situations and times. On the other hand, state self-objectification measures situational levels of self-objectification; specifically there are some situations (e.g., wearing a swimsuit) that are thought to specifically elicit self-objectification.

1.5 Appearance Monitoring

Self-objectification is reflected in appearance monitoring. Appearance monitoring involves constant surveillance of one's physical appearance. For example, it could involve people looking in the mirror and fixing their hair or clothes to ensure they look their best. However, it is not just the overt act of fixing appearance; appearance monitoring is also the process of making sure one's appearance is acceptable to others

and thus requires constantly thinking about what the body looks like. Evidence has shown that women who are high in trait self-objectification are also high in self-surveillance (Quinn, Chaudoir, & Kallen, 2011).

Women monitor their appearance because if their appearance is considered acceptable, there is a greater possibility of being treated better by others. As a result women become their “own first surveyors” (Berger, 1972, p. 46). Women will monitor and criticize their own appearance first, before others have the opportunity. This allows them to make changes or adjustments to be more acceptable (i.e., closer to the ideal) and to increase the likelihood that they will be treated more favourably by others. However, constant appearance monitoring can increase self-consciousness, and as a result increased attentional resources are devoted to physical appearance. Consequently, the mental resources and attention needed for other tasks and activities are limited (Fredrickson et al., 1998).

1.6 Psychological Consequences: Negative Subjective Experiences

Over time, self-objectification and appearance monitoring can have serious implications on psychological, physical and emotional states. According to objectification theory, the process of self-objectification and the appearance monitoring that accompanies it lead to several negative psychological outcomes: an increase in body shame, an increase in appearance anxiety, a decrease in peak motivational states (i.e., flow) and a decrease in interoceptive awareness (i.e., awareness of internal body cues such as hunger).

1.6.1 Body Shame. Body shame is a self-conscious emotion that occurs when women believe they fail to meet the internalized social standard or ideal for the body (Castonguay, Brunet, Ferguson & Sabiston, 2012). Body shame is associated with a perceived or feared loss of social status resulting in regret from not being able to live up to the ideal (Castonguay et al., 2012). Body shame is different from other self-conscious emotions (e.g., guilt, embarrassment) because the failure to meet the ideal is attributed to a global failure as a person (e.g., “I am a bad person”) rather than on a specific action (Lewis, 1971). The inability to reach this ideal can create a desire to hide, disappear, and escape the overwhelming feelings of unworthiness and powerlessness (Fredrickson & Roberts, 1997), all associated with feelings of shame.

There is significant evidence that self-objectification leads to body shame. Fredrickson and colleagues (1998) reported that when men and women tried on a bathing suit (versus a sweater) to increase self-objectification, there was an increase in body shame in women only; men’s body shame was not influenced based on the type of clothing they wore. Quinn, Kallen, Twenge, and Fredrickson (2006) also found that state self-objectification led to greater amounts of body shame in women. Calogero (2004) had men and women participate in conversations before completing a series of self-report questionnaires. She found that women who anticipated a male gaze (associated with greater self-objectification) during the conversation reported significantly greater amounts of body shame compared to women who anticipated a female gaze or no gaze.

1.6.2 Anxiety. Anxiety is a negative emotion that is experienced in anticipation of real or imagined threatening situations that are often ambiguous in nature (Lazarus, 1991). Anxiety is characterized by feelings of uneasiness, nervousness or worry. Somatic

experiences can also emerge such as sweaty palms, hunching over to hide, or blushing. According to objectification theory (Fredrickson & Roberts, 1997), self-objectification can lead to two types of anxiety: anxiety over appearance and anxiety about safety.

The fear of not knowing when, where or how one's body will be evaluated has the potential to cause appearance-related anxiety. In general, women experience greater amounts of anxiety about their appearance than men (Hagger & Stevenson, 2010; Dion, Dion, & Keelan, 1990). Tiggemann and Kuring (2004) linked self-objectification to appearance anxiety. They found that women higher in trait self-objectification reported higher appearance anxiety; this relationship was mediated by self-surveillance.

Anxiety due to safety concerns is associated with the idea that beauty is power (Fredrickson & Roberts, 1997). Beneke (1982) stated that men who rape are threatened by physically attractive women and believe that the women deserve it and were 'asking for it'. It has been suggested by some that women foster their own objectification through revealing clothing they choose to wear (Beiner, 2007). Recently, research has started to investigate women's anxiety due to fear of personal safety and strategies/rituals when anticipating sexual violence (Silva & Wright, 2009). Women qualitatively reported tactics and strategies such as not opening/answering doors, learning how to defend themselves (e.g., kick boxing), having keys or phone in hand, not making eye contact with others, or looking for members of law enforcement (Silva & Wright, 2009). However, little research has investigated anxiety over safety framed within self-objectification theory.

1.6.3 Peak Motivational States. The ability to become fully absorbed in a task both mentally and physically is referred to as being in a state of flow (considered to be a peak motivational state; Csikszentmihalyi, 1990). Flow is associated with feelings of happiness, calmness and enjoyment. To reach a state of flow, tasks require enough time for the individual to become lost in them; in addition, the activity cannot be too easy that it requires no skill on the individual's part, or too hard that it is difficult for the individual to become fully absorbed in it (Csikszentmihalyi, 1997). It has been suggested that intrinsic motivation may facilitate the ability to reach flow (Jackson, 1995; Kowal & Fortier, 2000).

Intrinsic motivation refers to doing something purely due to interest, challenge, or enjoyment (Ryan & Deci, 2000). If one does not think a task is interesting, challenging or will bring them enjoyment, it becomes extremely difficult to reach a state of flow. While flow can be achieved without being intrinsically motivated, it is extremely difficult for the individual to become absorbed in the task without intrinsic motivation. Although intrinsic motivation and flow are not the same thing, intrinsic motivation is an indicator of flow and has been shown to be a positively related to flow (Kowal & Fortier, 1999).

To date, there are no studies that have examined state self-objectification and flow directly. However, from a theoretical perspective, self-objectification should make it almost impossible to reach a state of flow. One's peak motivational states can become limited by experiencing states of self-consciousness. Women who self-objectify experience greater feelings of self-consciousness (Fredrickson & Roberts, 1997), which has the ability to disrupt our thoughts and feelings. When focused on physical appearance it is impossible to lose a sense of self-consciousness because attention is focused on the

self; thus, according to Csikszentmihalyi (1990), it should be impossible to achieve a state of flow in this instance, as flow requires a complete loss of self-consciousness.

Self-objectification can be considered a disruption in one's attention and focus as mental resources are used to monitor one's appearance and monitor others evaluating our appearance (Calogero et al., 2011). A study conducted by Tiggemann and Kuring (2004) looked at the relationship between trait self-objectification, flow (as an indicator of peak motivational state) and body surveillance using a series of questionnaires. For women, self-objectification and body surveillance displayed a small negative correlation with flow states (Tiggemann & Kuring, 2004).

1.6.4 Interoceptive Awareness: Awareness of Internal Bodily States. Internal bodily states, such as heart rate, blood glucose level and stomach contractions, are essential bodily sensations that are important for one's well-being (e.g., how hard one is working out, denying hunger, etc.). Generally, women are less accurate than men in monitoring their bodily sensations (Blascovich et al., 1992). According to objectification theory, women become so aware of their outer bodily appearance they have fewer perceptual resources to detect and monitor their inner bodily experiences (Fredrickson & Roberts, 1997). In addition, compared to men, women do not use these internal body cues as often to determine how they are feeling (Fredrickson & Roberts, 1997). This may be due to the fact that women place more focus on their outer physical appearance and less on how they are feeling.

A study by Ainley and Tsakiris (2013) had women complete a measure of interoceptive awareness. Heart rate was objectively measured using a piezo-electric pulse

transducer (which measures pulse at the finger). The women were also asked to listen to their bodies and silently count their own heartbeat. Greater interoceptive awareness was indicated when the subjective assessment of heart rate was close to the objective measure. Next, participants completed body image measures assessing self-objectification and body consciousness. The researchers found that trait self-objectification was negatively correlated to interoceptive awareness; participants high in trait self-objectification were less accurate when counting their own heart rate compared to those low in self-objectification. Therefore, the authors concluded that women high in self-objectification were less accurate in listening to their internal body sensations (i.e., heart rate; Ainley & Tsakiris, 2013). However, the researchers also found that body consciousness (awareness and acknowledgement of internal sensations) was unrelated to interoceptive awareness (Ainley & Tsakiris, 2013).

By contrast, Myers and Crowther (2008) found a positive relationship between interoceptive awareness and trait self-objectification among college women using a series of questionnaires. Interoceptive awareness was measured using the interoceptive awareness subscale from the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983), which assesses sensitivity to internal emotional states and feelings of hunger. Women who reported higher trait self-objectification had greater awareness of internal cues and sensations in regards to hunger (Myers & Crowther, 2008). Thus, the limited research to date has been inconsistent as to the relationship between self-objectification and interoceptive awareness. There is evidence suggesting that trait self-objectification hinders state interoceptive awareness measured using heart rate (Ainley & Tsakiris, 2013) while trait self-objectification has also been associated with improved subjectively

evaluated interoceptive awareness of emotion and hunger (Myers & Crowther, 2008). These differences may be related to which internal sensations are measured (e.g., heart rate or hunger cues), whether state or trait interoceptive awareness is assessed, and how interoceptive awareness is measured (e.g., perceptions of objective physiological outcomes or self-report questionnaires).

1.7 Mental Health Risks

According to objectification theory, these negative psychological consequences (i.e., body shame, anxiety, poor peak motivation, and insensitivity to internal body cues) can lead to poor mental health outcomes for women. In its initial conception, objectification theory outlined three specific mental health risks: depression, eating disorders and sexual dysfunction.

1.7.1 Depression. As mentioned, the accumulation of negative subjective experiences can contribute to psychological disorders including depressive episodes, where the individual experiences prolonged unhappiness and/or a loss of pleasure in activities (Fredrickson & Roberts, 1997). Women are more likely than men to develop depressive symptoms (Nolen-Hoeksema, 1990; Van de Velde, Bracke, & Levecque, 2010). According to Statistics Canada women report higher rates of mood and anxiety-related disorders (including depression) compared to men (Statistics Canada, 2013).

According to self-objectification theory factors such as poorer social status may play a role in the higher rates of depression for women (Fredrickson & Roberts, 1997). For example, women are less likely to reach top positions in the workplace, they make less money than men for equivalent jobs, and they are more likely to experience

discrimination in the workplace (Aldoory & Toth, 2002), in part because they are valued for their bodies and not their minds. Further, women are generally considered less assertive and more self-sacrificing and emotional than men, which may also contribute to reasons why women are more likely than men to become depressed (Fredrickson & Roberts, 1997). However, objectification theory also explains the higher rates of depression in women compared to men as occurring via negative subjective experiences (e.g., body shame and anxiety), as women are preoccupied with meeting the female ideal, yet are unlikely to be successful.

Women tend to attribute their failure to uphold the female ideal to their internal, stable and global qualities. For example, women may feel helpless to perfect their physical appearance and attract positive attention from other people (Fredrickson & Roberts, 1997). These feelings of helplessness have been linked to the experience of depression (Nolen-Hoeksema, Morrow, and Fredrickson, 1993). Nolen-Hoeksema and colleagues (1993) found that girls and women not only think about their physical appearance more than boys and men, but that these feelings were associated with depressive symptoms. Paxton, Neumark-Sztainer, Hannan, and Eisenberg (2006) completed a 5-year longitudinal study assessing the link between body dissatisfaction and depressive mood among adolescent girls and boys. Body dissatisfaction was a significant predictor for girl's depressive mood five years later; however body dissatisfaction was not a significant predictor for depressive mood for boys (Paxton et al., 2006).

A second way in which self-objectification theory suggests that women's subjective experiences are linked to depression is through sexual objectification and specifically due to sexual harassment and victimization, which women experience in

much higher rates than men. Women are 11 times more likely than men to be victims of sexual crimes (Nolen-Hoeksema & Girgus, 1994; Statistics Canada, 2011). These experiences may also contribute to putting women at an increased risk for depression.

Szymanski and Henning (2007) examined if any or all of the negative psychological consequences outlined in objectification theory had a relationship to depression. Women aged 18-65 completed measures of the various negative psychological consequences (i.e., body shame, anxiety, flow states and interoceptive awareness) of objectification theory and measures of depression. Correlational analysis found a moderate relationship between body shame and depression in women (Szymanski & Henning, 2007).

1.7.2 Sexual Dysfunction. The second mental health risk described by objectification theory resulting from negative psychological experiences is sexual dysfunction. Women report more sexual dissatisfaction and sexual dysfunction compared to men (Litzinger & Gordon, 2005; Morokoff, 1990). However, since women and men are both equally sexual, it may be the cultural double standard of gender-role stereotypes present in society that influences the gender differences in sexual experiences (Tevlin & Leiblum, 1983). Gender-role stereotypes are social and behavioural norms put in place by society that tell us how people from specific groups should act and think (Eagly, 2001). Traditionally, the male gender role is to be strong and masculine; men have typically been responsible for supporting their families by working outside the home. By contrast, women are more likely to be associated with characteristics such as fragility and passivity, and even when they work outside the home, they still often bear the greatest responsibility for taking care of the home and their families. In relation to sexual

experiences, social norms suggest men should play the dominant role in the relationship, while women are passive and should be weak in the relationship (Fredrickson & Roberts, 1997).

Objectification theory suggests several ways that self-objectification may contribute to sexual dysfunction. First, body monitoring may lead women to engage in spectating, self-conscious monitoring of the body during sexual encounters. As a result, attention is divided between sexual activity and monitoring appearance, thus leading to sexual dysfunction as they are unable to fully engage in the sexual act (Masters & Johnson, 1970). Furthermore, shame and anxiety about their bodies can be heightened during sexual experiences disallowing women from experiencing enjoyment during sex (Fredrickson & Roberts, 1997). Finally, monitoring of internal bodily sensations is often required during sexual experiences. However, objectification leads to insensitivity to these cues, which may decrease pleasure.

1.7.3 Eating Disorders. The third health outcome thought to result from negative subjective experiences is eating disorders. In Canada, approximately 2.8% of women and .5% of men aged 15 and older are considered at risk for eating disorders (Public Health Agency of Canada, 2014). A survey conducted by Garner (1997) reported that 15% of women said they would give up five years of their life to achieve their weight goals. In addition, 12% of women admitted to using diet pills, and 6% of women admitted inducing vomiting and using laxatives to control their weight (Garner, 1997). According to objectification theory, self-objectification may contribute to the development of eating disorders in women in at least two different ways. First, eating disorders may represent an attempt by women to meet the ideal in order to reduce feelings of shame and anxiety that

are associated with failing to meet the ideal, and in particular associated with being overweight. Alternatively, eating disorders can be seen as a form of resistance to the culture's objectification. For example, bingeing or overeating, which can lead to being overweight, can be seen as a refusal to meet the thin ideal.

1.7.4 Other Health-Related Outcomes. In addition to the mental health risks outlined by objectification theory (depression, sexual dysfunction and eating disorders), other health risk outcomes have subsequently been identified in the literature as being linked to objectification.

1.7.4.1 Cosmetic Surgery. In the United States there were 14.8 million elective cosmetic surgeries in 2012, including 286,000 breast augmentation procedures and 6.1 million Botox procedures (2012 Plastic Surgery Statistics Report, 2013). In addition, in the United States 91% percent of all elective cosmetic procedures (12.8 million) were performed on women (2012 Plastic Surgery Statistics Report, 2013). Self-objectification may contribute to women undergoing, or at least considering cosmetic surgery, as it is one way to modify certain areas of the body to move closer to the female ideal. A study conducted by Calogero, Pina, Park, and Rahemtulla (2010) investigated college women's attitudes towards cosmetic surgery. Women who reported greater amounts of self-objectification, body-surveillance and body shame reported considering cosmetic surgery more than women lower in self-objectification (Calogero et al., 2010).

1.7.4.2 Dietary Restraint. Another potentially negative health outcome associated with self-objectification is dietary restraint. Dietary restraint involves attempting to maintain or lose weight by carefully following a set of cognitive rules about what one

eats, how much one eats, and when one eats, rather than listening to physiological cues (Herman & Mack, 1975). Fredrickson et al. (1998) manipulated self-objectification in women and measured how many cookies women ate from those that were placed in front of them. Based on the amount of cookie eaten, participants were classified into one of three groups: true restrainers (those who ate less than half of one cookie), symbolic restrainers (those who ate more than half but less than one whole cookie), and non-restrainers (those who ate more than one whole cookie). As body shame increased, women refrained from eating greater amounts of the cookies; women were 1.15 times more likely to be in the true restraint group than in the no restraint group, and 1.45 times more likely to be in the symbolic restraint group than in the no restraint group (Fredrickson et al., 1998). The greatest amount of body shame was reported by women in the swimsuit condition (i.e., self-objectification), which in turn predicted restrained eating (Fredrickson et al., 1998).

1.7.4.3 Smoking. Another health behaviour that may be linked to self-objectification is smoking. Smoking may be a way to control appetite and to refrain from eating, allowing women to control their weight and try to achieve the ideal. Harrell, Fredrickson, Pomerleau, and Nolen-Hoeksema (2006) found that female college smokers scored significantly higher on measures of trait self-objectification, dieting and binge eating compared to non-smokers.

1.7.4.4 Self-esteem. Self-esteem, or self-worth, is the positive or negative evaluation of oneself (Rosenberg, 1989). Self-esteem has been shown to be lower in individuals who experience greater amounts of state self-objectification in objectifying situations, and lower for women compared to men (Hebl, King, & Lin, 2004). For

example, Tylka and Sabik (2010) found that self-esteem among college females negatively predicted body surveillance, body comparisons and body shame. As women focused on their physical appearance, self-esteem became more negative. Body surveillance was positively related to body comparisons, which in turn was positively related to body shame (Tylka & Sabik, 2010).

1.7.4.5 Exercise. Finally, exercise-related behaviours and cognitions are also associated with self-objectification. Exercise is one way to achieve and maintain the ideal physique. Prichard and Tiggemann (2008) found that female fitness class participants who exercised within a fitness facility displayed greater amounts of self-objectification and eating disturbances and negative amounts of body-esteem, compared to those who exercised outside the fitness facility. In addition, participants who spent more time on cardio-based workouts reported higher self-objectification, disordered eating, and appearance-related reasons for working out compared to those who spent more time in yoga-based exercise (Prichard & Tiggemann, 2008). Further, appearance-related motives were shown to mediate the relationship between exercise type and self-objectification (Prichard & Tiggemann, 2008). A study by Daubenmier (2005) examined the difference between aerobic and yoga participants on various body image outcomes. The yoga participants reported greater body awareness and responsiveness, as well as lower levels of trait self-objectification and disordered eating, compared to aerobic participants (Daubenmier, 2005). Yoga-based exercise is thought to have more of an emphasis on health, compared to an appearance-related focus on the body of more traditional forms of exercise.

1.8 Inducing State Self-Objectification: Swimsuit-Sweater Paradigm

Self-objectification has been widely researched using a variety of experimental paradigms (e.g., non-appearance versus appearance commentary, male versus female gaze; Fredrickson et al., 1998; Calogero, 2004; Quinn et al., 2006). However, most frequently, self-objectification has been studied using the swimsuit-sweater paradigm. The swimsuit-sweater paradigm serves as a way to manipulate state self-objectification and observe the consequent behaviours and experiences.

This paradigm involves participants believing they are participating in a study on consumer behaviour, and that they will be asked to try and rate several products. Participants are randomly assigned to one of two conditions, without their knowledge. In the self-objectification condition, participants are asked to try on and evaluate a swimsuit; in the control condition, they are asked to try on and rate a sweater. Women in the swimsuit condition report greater state self-objectification compared to those in the sweater condition, and some studies have shown that this response occurs only in women (Fredrickson et al., 1998; Quinn et al., 2006), consistent with objectification theory. However, other research has shown that self-objectification increased in a sample of heterosexual and homosexual men wearing speedos (Martins, Tiggemann, & Kirkbride, 2007). Further, in one study, women reported greater state self-objectification than men in the swimsuit condition across all ethnicities (Hebl et al., 2004).

The swimsuit is thought to induce self-objectification because women focus on their physical appearance, due to the exposure of their bodies. In the sweater condition the body is not on display to the same extent and individuals can hide their physical appearance more easily. Further, in a swimsuit, one's measurements (e.g., waist and

hips), weight, size, and shape are more easily noticeable in comparison to the sweater condition, where these vulnerable aspects of physical appearance are hidden under greater amounts of clothing. Due to the vulnerability of having one's physical appearance on display and evaluated, the swimsuit condition may encourage individuals to think more about their bodies and what they look like, not only to themselves but also to others. In most instances, women typically value their appearance over their competence (the ability to do something successfully; Calogero, Herbozo, & Thompson, 2009). Being placed in a swimsuit can remind the individual how much she deviates from the ideal.

Using the swimsuit-sweater paradigm, individuals in the self-objectification group have reported greater feelings of state self-objectification (Fredrickson et al., 1998; Gapinski, Brownell, & LaFrance, 2003; Quinn et al., 2006), greater feelings of shame (Fredrickson et al., 1998; Quinn et al., 2006), and lower intrinsic motivation as assessed by the work preferences inventory (Gapinski et al., 2003). Moreover, women who self-objectified continued to think about their body and physical appearance, and also experience body shame even after the manipulation was over (i.e., they changed out of the swimsuit; Quinn et al., 2006). In addition to these outcomes, several studies have examined how induced self-objectification is associated with performance outcomes.

1.9 Self-Objectification and Performance Outcomes

Self-objectification ultimately leads to a disruption or shift in attention (Fredrickson and Roberts, 1997; Quinn et al., 2011). As noted previously, when self-objectifying and monitoring appearance, attention is taken away from other tasks, making it impossible to achieve optimal performance on these other tasks. Thus, constant appearance monitoring may lead to diminished performance on a variety of tasks. Quinn

and colleagues (2011) outlined how self-objectification can disrupt three types of performance: flow states, cognitive performance and physical performance.

1.9.1 Flow. Flow states are situations in which a woman is able to lose herself in a specific task or action (Quinn et al., 2011). In order to achieve a state of flow, individuals need to be in a state of non-self-consciousness where little or no awareness is placed on oneself, and instead attention is diverted to the task (Csikszentmihalyi, 1982). Individuals who are high in trait self-objectification are less likely to achieve flow states, mainly because they are not able to lose themselves in the action given that they are constantly monitoring their appearance. Tiggemann and Kuring (2004) reported that self-objectification was related to greater levels of self-surveillance, which was in turn related to a decrease in flow states. As individuals thought more about their bodies, they reported lower frequency of flow states.

1.9.2 Cognitive Performance. Cognitive performance is the second type of performance outlined by Quinn and colleagues (2011) that is affected by self-objectification. Research using the swimsuit-sweater paradigm has demonstrated derailments in cognitive performance resulting from self-objectification. Fredrickson and colleagues (1998) had women and men try on a bathing suit or a sweater and complete a math test. It was found that women in the swimsuit condition reported higher state self-objectification and performed significantly worse on the math test compared to women in the sweater condition; however men's self-objectification and performance were not affected by wearing a swimsuit (Fredrickson et al., 1998).

Quinn and colleagues (2006) examined whether gender differences in performance on a math test occurred due to a “stereotype threat”. It has been suggested that a math test presents a “gender stereotype threat”, as women are generally believed to have inferior math skills compared to men. Therefore, their performance may have suffered due to the stereotype threat (i.e. that women are not good at math) rather than from self-objectification (Quinn et al., 2011). To determine if the stereotype threat was the reason women performed more poorly than men on the math test, the researchers used a different assessment of cognitive performance - the Stroop Test. The Stroop Test (Stroop, 1935) has been used in hundreds of psychological studies to assess attentional bias through interference in reaction time tasks (Engle, 2002). Individuals are shown colour words in incongruent ink colours (e.g., the word ‘red’ printed in blue ink). The task is to say aloud the colour of the word, and not the word itself. Cognitive performance is measured by the time taken to say the colour of the words. When individuals’ attention is placed on their appearance (rather than the task), there is greater interference (time between reading the word and saying the word); thus, the time to complete the task increases. Therefore, according to objectification theory, inducing self-objectification should result in greater inference, and thus longer times, on the Stroop task.

Quinn and colleagues (2006) induced self-objectification by using the swimsuit-sweater paradigm and then had women complete a variation of the Stroop Test with colour words, body-related words (e.g., weight, ugly, pounds, etc.) and neutral words (e.g., switch, civil, fans, etc.). Quinn and colleagues (2006) successfully ruled out the “stereotype threat” using the Stroop Test. Results indicated that undergraduate women who reported state self-objectification (i.e., in the swimsuit condition) performed

significantly worse on all variations of the Stroop Test, as measured by their interference time (time between seeing the word and reading the word). However, the reaction time was faster during the Stroop test using body and neutral words compared to colour words for women in both conditions (Quinn et al., 2006). Together, the findings from Fredrickson et al. (1998) and Quinn et al. (2006) suggest that higher state self-objectification negatively impacts cognitive performance in women, consistent with self-objectification theory.

However, not all research examining the effects of self-objectification on cognitive performance has shown a negative effect. Tiggemann and Boundy (2008) induced self-objectification through manipulating two variables: the environment (a regular study room versus a study room with mirrors, scales and fashion magazines) and appearance compliments (no compliment versus an appearance compliment on their attire). Women were placed in either the regular or threatening room, and in each condition, half of the participants received no comment and half received an appearance compliment. Cognitive performance was assessed using two cognitive tasks, one assessing logical reasoning and the other assessing spatial orientation. There were no significant differences in cognitive performance based on either experimental manipulation (Tiggemann & Boundy, 2008). However, this result may have occurred because the experimental manipulation may have not been strong enough to elicit high enough levels of self-objectification to derail performance. Alternatively, the cognitive performance tasks may not have been good assessments for these individuals; it is possible that these assessments were either too complex or were not a good indicator of cognitive performance.

1.9.3 Physical Performance. Quinn et al. (2011) also noted that physical performance may be affected by self-objectification. Objectification theory (Fredrickson & Roberts, 1997) posits that girl's and women's actions grow uncertain and hesitant when they self-objectify, leading to smaller movements to avoid invading physical space around them, and drawing attention to themselves. Only one study has attempted to show how self-objectification can interfere with one's physical performance. Fredrickson and Harrison (2005) examined how self-objectification affected adolescent girls' motor performance in a throwing task during a co-ed gym class. Adolescent girls were asked to complete a questionnaire packet containing measures of sport participation and trait self-objectification, then return one week later to complete the state self-objectification measure in small groups before completing a throwing task. Participants took part in a softball throwing task, where they were asked to throw the ball as hard as they could three times against a wall that was fifty feet away. Immediately after the physical performance task the adolescent girls had to report how much they thought about their skill at throwing and how much they thought about how they looked during the throwing task by responding to two written questions using a Likert scale ranging from 0 (*not at all*) to 6 (*a lot*). Throwing performance was measured through observation; behavioural coding by researchers was used to evaluate five distinct aspects of throwing performance: backswing action, trunk action, humorous action, forearm action, and stepping action. Each throw was coded for each of the five components. Force of the throw was assessed subjectively by a graduate student.

The results showed that adolescent girls who were higher in self-objectification (as assessed by a combination of state and trait self-objectification as well as thoughts

during performance) performed worse on the throwing task, based on the subjectively assessed biomechanics of the throw. More specifically, women had smaller movements during the throws when they were higher in self-objectification. Further, the force was lower (assessed qualitatively) in those higher in self-objectification (Fredrickson & Harrison, 2005). The authors suggested this poorer performance may have been a result of the girls trying to refrain from drawing further attention to their bodies by reducing their physical actions. Thus, Fredrickson and Harrison (2005) demonstrated that self-objectification was associated with poorer physical performance.

Despite Fredrickson and Harrison's (2005) findings, there were several limitations to the study. Firstly, adolescent girls recorded their thoughts during the throwing task immediately after the physical performance task was completed. This measure assessed how much they thought about their skills and how much they thought about how they looked during the task. This measurement may not be a powerful assessment to determine if self-objectification occurred during the task. In addition, the researchers included these two questions with a composite of trait and state self-objectification to assess overall self-objectification, which makes it difficult to distinguish between effects of state and trait objectification. Further, given the correlational design, it is impossible to draw causal conclusions because the study did not have a control group to compare results. In addition, the assessment of throwing performance was subjective. The researchers used observation to determine participants' biomechanical performance and force of the throw. Instead, a more objective measurement of physical performance may have provided a less biased indicator of movement quality and performance outcomes.

CHAPTER TWO: RATIONALE, PURPOSE, & HYPOTHESIS

2.1 Rationale

Objectification theory (Fredrickson & Roberts, 1997) posits that sexual objectification, common in North American society, encourages girls and women to treat their bodies as objects to be valued on the basis of their physical appearance and to be used by others. In turn, sexual objectification leads them to self-objectify (view their body from a third person perspective), reflected in appearance monitoring (Fredrickson et al., 1998). Negative psychological consequences result from self-objectification: body shame, anxiety, the inability to reach peak motivational states (e.g., flow, intrinsic motivation, cognitive and physical performance) and insensitivity to internal body cues. Ultimately, these psychological outcomes contribute to mental health risks such as depression, disordered eating and sexual dysfunction (Fredrickson et al., 1998). There is also the potential for additional harmful behaviours such as cosmetic surgery, dietary restraint, and smoking (Calogero et al., 2010; Fredrickson et al., 1998; Harrell et al., 2006).

Currently, the majority of research using objectification theory has investigated the impact of self-objectification on body shame; there is relatively little research investigating its effect on appearance anxiety (Tiggemann & Kuring, 2004) and intrinsic motivation (Gapinski et al., 2003). Secondly, there is inconsistent research on how self-objectification can influence interoceptive awareness. Ainley and Tsakiris (2013) found that women higher in self-objectification reported lower interoceptive awareness as measured by state assessments of heart rate. However, Myers and Crowther (2008) found

that individuals high in trait self-objectification self-reported greater general awareness of internal cues and sensations about hunger. Thus, there is a need to examine other contentions of objectification theory, as most studies investigating the other outcomes (appearance anxiety, flow, and interoceptive awareness) have been correlational in nature. Lastly, while cognitive performance has been investigated as an outcome of self-objectification, generally showing impaired cognitive performance as a result of self-objectification (Fredrickson et al., 1998; Gapinski et al., 2003; Quinn et al., 2006; Tiggemann & Boundy, 2008), only one study (Fredrickson & Harrison, 2005) has investigated the impact of self-objectification on physical performance. This study had several limitations as noted in the previous chapter, and it is not possible to draw causal conclusions about the impact of self-objectification on physical performance based on this study.

It is important to look at the impact of self-objectification on physical performance because self-objectification is commonly experienced by many women and has the ability to impede performance of daily tasks and activities (e.g., academic performance, driving a car, sport performance, sex, etc.). According to objectification theory, physical performance should suffer when self-objectifying individuals pay more attention to monitoring their appearance and leave fewer attentional resources for their performance (Fredrickson & Roberts, 1997).

2.2 Purpose Statement

The purpose of this study was to examine the impact of manipulated state self-objectification on social physique anxiety, intrinsic motivation, and interoceptive awareness, as well as physical performance, in female university students.

2.3 Specific Objectives

1. To examine if state self-objectification is associated with higher state social physique anxiety in university women.
2. To examine if state self-objectification is associated with lower intrinsic motivation in university women.
3. To examine if state self-objectification is associated with lower state interoceptive awareness in university women.
4. To examine if state self-objectification is associated with restricted direction of movements of the arms, legs, and trunk during balance tasks in university women.
5. To examine if state self-objectification is associated with poorer objective performance outcomes (e.g., time and errors) during the balance tasks in university women.

2.4 Hypotheses

1. It was hypothesized that women in the swimsuit condition would report higher self-objectification which would lead to higher social physique anxiety, compared to women in the sweater condition.

Rationale: According to objectification theory (Fredrickson & Roberts, 1997), self-objectification should lead to increased anxiety related to appearance and safety. In addition, research has shown that state self-objectification has been linked to negative psychological outcomes, including anxiety (Gapinski et al., 2003). Not knowing how and when someone is viewing their body can lead to body-related anxiety (Fredrickson & Roberts, 1997). Social physique anxiety explicitly examines anxiety that occurs when women believe their bodies will be

evaluated by others. To date, only one study (Tiggemann & Kuring, 2004) has explicitly investigated the relationship between self-objectification and appearance-related anxiety, while all other studies have focused on general fear and anxiety (Gapinski et al., 2003; Tiggemann & Boundy, 2008). Furthermore, few studies have experimentally investigated the relationship between self-objectification and appearance anxiety (Calogero, 2004; Monro & Huon, 2005); the majority of the research has been correlational in nature (Aubrey, 2006; Greenloaf & McGreer, 2006; Szymanski & Henning, 2007; Tiggemann & Kuring, 2004). Tiggemann and Kuring (2008) found that self-objectification was positively correlated to self-surveillance, which in turn was positively correlated to a measure of general appearance anxiety.

2. It was hypothesized that women in the swimsuit condition would report higher self-objectification which would lead to lower intrinsic motivation for the physical tasks, compared to women in the sweater condition.

Rationale: Objectification theory proposes that peak motivational states, such as flow or intrinsic motivation, are negatively affected as women become preoccupied with their physical appearance (Fredrickson & Roberts, 1997).

Intrinsic motivation occurs when individuals are driven to perform an activity for enjoyment or challenge, not by receiving rewards except for the activity itself (Deci, 1971). Plant and Ryan (1985) have shown that if an individual becomes self-aware (e.g., notices a video camera), intrinsic motivation is reduced.

Tiggemann and Kuring (2004) investigated the influence of self-objectification on flow, and found that self-objectification was positively related to self-surveillance,

which in turn had a negative association to flow. Gapinski and colleagues (2003) found that increased self-objectification among women in the swimsuit group led to decreased intrinsic motivation during a cognitive task. To date no studies have looked at the influence of self-objectification on intrinsic motivation during a physical performance task. However, given that self-surveillance, or thinking about one's own body, has been related to lower frequencies of flow states (Quinn et al., 2011) and given the link between flow and intrinsic motivation, it is expected that intrinsic motivation will also be reduced.

3. It was hypothesized that women in the swimsuit condition would report higher self-objectification which would lead to lower state interoceptive awareness, compared to women in the sweater condition.

Rationale: Currently, there is contradictory research that suggests that self-objectification leads to poor interoceptive awareness. A study by Myers and Crowther (2008) found that interoceptive awareness was a positive partial mediator between the relationship of trait self-objectification and eating behaviours in college-aged women. However, Ainley and Tsakiris (2013) reported that interoceptive awareness was negatively correlated to trait self-objectification and unrelated to body consciousness. According to objectification theory (Fredrickson et al., 1998), when women self-objectify they are left with fewer resources to notice and interpret their inner bodily sensations. Thus, according to objectification theory, interoceptive awareness should be lower in the swimsuit condition.

4. It was hypothesized that women in the swimsuit condition would report higher self-objectification, which would lead to restricted direction of movements during the balance tasks. It is hypothesized movements will be made that restrict body space, in which women will control their arm, trunk and leg movements to be towards the midline of the body or crossed, compared to away from the midline of the body.

Rationale: According to objectification theory (Fredrickson & Roberts, 1977), girl's and women's actions grow uncertain and hesitant when they self-objectify, leading to restricted movements to avoid invading physical space around them, and drawing attention to themselves. In addition, Fredrickson and Harrison (2005) noted that girls who self-objectified restricted their physical movements during a throwing task. This may represent an attempt to hide or cover up the body to disrupt other people's views of their physical self, resulting in high levels of self-objectification. By restricting bodily space and keeping movements towards the midline of the body, it is easier to cover up the body and hide it.

5. It was hypothesized that women in the swimsuit condition would report higher self-objectification, which would lead to poorer objective performance outcomes, as reflected in shorter durations during a 1-leg stand, shorter distance during the functional reach test, and longer durations and more errors on the tandem walk.

Rationale: According to objectification theory (Fredrickson & Roberts, 1997), viewing the body from a third person perspective ultimately leads to a disruption or shift in attention towards physical appearance and takes away from the mental resources needed to perform physical or cognitive tasks (Fredrickson & Roberts,

1997; Quinn et al., 2006). Several studies have shown that self-objectification leads to poorer performance during cognitive tasks such as math tests (Fredrickson et al., 1998) and the Stroop test (Quinn et al., 2006). Self-objectification is associated with poorer physical performance as shown in a throwing task with adolescent girls (Fredrickson & Harrison, 2005). Fredrickson and Harrison (2005) found that girls actually refrained from making large bodily movements when they were higher in self-objectification. Girls who objectified to a greater extent when throwing a softball demonstrated poorer throwing performance.

CHAPTER 3: METHODOLOGY

3.1 Participants

A total of 60 participants were recruited for the study and scheduled for a testing session. However, 6 participants did not show up for their scheduled session, resulting in a sample size of 54 participants, 28 in the sweater condition and 26 in the swimsuit condition. All participants were female undergraduate students aged 18-33 years attending Brock University. Based on previous research using the same manipulation in a similar sample to investigate the effects on body shame reported by Quinn and colleagues (2006), a Cohen's $d = .85$ was calculated. According to Cohen (1992), .85 represents a large effect size. At $\alpha = .05$ and using a power of .80 for an ANOVA of two groups, a minimum of 26 participants per group was needed (Cohen, 1992). Thus, the sample size for the present study was considered adequate.

Participants were recruited through word of mouth, announcements made in classes (see Appendix A), and through posters (see Appendix B) placed around Brock University campus. The exclusion criteria for participants included those who perform physical activity requiring good balance (e.g., figure skating, gymnastics) or sports where individuals wear a bathing suit (e.g., swimming). In addition, varsity athletes and any individual with a history of a clinically diagnosed eating disorder were excluded, as athletes may perform better on the physical tasks and both groups have atypical body image concerns (Davis & Cowles, 1989; Fulkerson, Keel, Leon, & Dorr, 1999). Further, individuals with a neuromuscular disorder that could affect balance were excluded as it may have impacted performance on the balance tasks. Participants were required to also

pass a physical activity clearance and be able to walk and stand independently without the use of an assistive device. Finally, participants were required to be able to read, understand, and write English fluently without the use of any translation devices, in order to understand the subtlety of the manipulations and questionnaires.

The final sample consisted of 52 participants, 28 in the sweater condition and 24 in the swimsuit condition (see Table 1). Two participants were excluded from the study. One was randomized to the swimsuit condition; she withdrew during the study. The second was removed due to her lack of English proficiency. Participants came from a variety of programs within the university. Approximately 54.9% were Business majors, 9.8% Psychology majors, 11.8% Graduate students (Masters of Business Administration and Applied Health Sciences), 11.7% Physical Education/ Kinesiology majors, and remaining students were from Neuroscience (2.0%), Nursing (2.0%), Linguistics (2.0%), Geography (2.0%), and General Sciences (3.9%). Of the sample, 37.9% of students were in 4th year, 29.4% second year, 19.6% third year, 5.9% fifth year, and 3.9% in first and graduate year (see Table 1). In addition, academic majors were distributed approximately equally across both groups (swimsuit and sweater). In the swimsuit condition, 51.9% of the women were Business majors, 14.8% were Psychology majors, 14.8% were Physical Education/Kinesiology majors, and the remaining students were from Graduate Studies (7.4%), Nursing (3.7%), and General Sciences (7.4%). In the sweater condition, 58.3% of the women were Business majors, 4.2% were Psychology majors, 8.4% were Physical Education/ Kinesiology majors, 16.7% were Graduate students, and the remaining students were from Neuroscience (4.2%), Linguistics (4.2%), and Geography (4.2%).

Table 1

Descriptives for Demographic Information by Condition

Variable	Swimsuit	Sweater
Age	23.00 (2.50)	21.71 (3.10)
Year	3.42 (1.06)	3.07 (1.25)
IPAQ	1654.09 (1131.99)	2191.42 (1935.37)
Height (m)	1.63 (.07)	1.65 (.07)
Weight (kg)	60.91 (11.92)	62.38 (13.44)
BMI (wt/h ²)	22.83 (3.73)	22.89 (4.29)

Note. IPAQ = International Physical Activity Questionnaire compilation for moderate and vigorous physical activity.

3.2 Measures

Participants completed the following series of questionnaires assessing the following information (see Appendix C for all questionnaires):

3.2.1 Physical Activity Readiness Questionnaire (PAR-Q; Canadian Society for Exercise Physiology [CSEP], 2002). This questionnaire was used to ensure that all participants were able to participate in physical activity prior to the study. This questionnaire asks 7 yes/no questions in regards to one's health and medical history. If a participant answers "yes" to any of the questions, she was not able to participate in the study for safety reasons.

3.2.2 Demographic Variables. Age, year in school and major were collected through self-report. As well, information about the type and amount of organized sport they currently engage in, have played in the past year, and other types of physical activities (e.g., yoga) were measured. Participants were asked to report the frequency and duration for each response.

3.2.3 International Physical Activity Questionnaire (IPAQ; Craig et al., 2003).

This questionnaire was used to assess habitual physical activity. This questionnaire measures frequency of walking, moderate, and vigorous physical activity over the last 7 days (i.e., days per week and minutes per day). Participants indicated the number of days in which they participated in each intensity of exercise, and the average duration per day of each intensity. Total weekly physical activity is estimated by multiplying the days per week by minutes per day by the metabolic equivalent of task (MET) energy expenditure estimate assigned to each category of activity, and summing the values for each intensity. For the present study, only moderate and vigorous activity were used. Craig et al. (2003) demonstrated that the IPAQ presents good reliability and validity.

3.2.4 Trait Self-Objectification Questionnaire (Noll & Fredrickson, 1998). This questionnaire was developed to assess an individual's trait level of self-objectification. Participants were asked to rank 10 body characteristics in order from most important to least important. Five items are appearance-based characteristics (weight, physical attractiveness, sex appeal, firm/sculpted muscles, and body measurements), and five are non-observable competence-based traits (physical coordination, health, strength, physical fitness level, and energy level). Each item is given a score based on its rank. Appearance-based and competence-based sub-totals will be summed. Self-objectification is calculated by subtracting the sum of the competence-based score from the appearance-based score. Scores can range from -25 to 25 with a negative score indicating greater self-objectification. This questionnaire has been used frequently to measure trait self-objectification (e.g., Fredrickson et al., 1998). Evidence of validity and reliability in college-aged women has been provided, with scores of trait self-objectification being

positively correlated with appearance anxiety and body size dissatisfaction, but not limited to only women who are dissatisfied with their physical appearance (Noll & Fredrickson, 1998).

3.2.5 State Social Physique Anxiety Scale (S-SPAS; Kruisselbrink, Dodge, Swanburg, & MacLeod, 2004). The original questionnaire created by Hart, Leary, and Rejeski (1989) measures trait concern over one's body being evaluated by others. The 9-item state version, based on Martin, Rejeski, Leary, McAuley, and Bane (1997) 9-item trait version, was used as it assesses concerns at that moment about the body being evaluated by others. Participants answered questions (e.g., "I feel uptight about my physique/body") by indicating how characteristic each comment is of themselves at that moment using a 5-point Likert scale from 1 (*not at all true*) to 5 (*extremely true*). This scale has demonstrated construct validity, indicating that social physique anxiety can be conceptualized as a situational variable (Martin Ginis, Murru, Conlin, & Strong, 2011). A Cronbach's alpha was conducted and showed adequate internal consistency reliability ($\alpha = .86$).

3.2.6 Twenty Statements Test (TST; Fredrickson et al., 1998). This questionnaire was originally developed by Kuhn and McPartland (1954) and later modified by Fredrickson and colleagues (1998) to measure state self-objectification, how preoccupied an individual is about her physical appearance at that given time. Participants read a short description advising "In the twenty blanks below, please make twenty different statements about yourself and your identity that complete the sentence 'I am ____'. Don't worry about evaluating the logic or importance of your answers – just write the responses as they occur to you". Participants were to answer each sentence as if

they were describing themselves to themselves and not to somebody else. All responses were categorized into one of six groups (1) body shape and size (e.g., “I am thin”); (2) other physical appearance (e.g., “I am blonde”); (3) physical competence (e.g., “I am strong”); (4) traits and abilities (e.g., “I am smart”); (5) states and emotions (e.g., “I am stressed”); (6) anything else that is uncoded. Responses in the first two categories are indicative of state self-objectification; the greater the number of responses in these two categories, the greater the level of state self-objectification that an individual is experiencing. Inter-rater agreement of 84.5% was found for the body shape and size group, and an overall 83.8% inter-rater agreement was achieved in previous work (Fredrickson et al., 1998).

3.2.7 Body Consciousness Questionnaire (BCQ) – Private Body Consciousness

Subscale (PBCS; Miller, Murphy, & Buss, 1981). This measure assesses sensitive and private changes to one’s bodily states, also called interoceptive awareness. Participants completed five questions assessing how in tune they generally are with the physiological changes and responses in their body. Questions include “I am sensitive to internal bodily tensions”. Responses were rated on a 5-point Likert scale ranging from 1 (*extremely uncharacteristic*) to 5 (*extremely characteristic*). Higher responses represented greater body awareness, whereas lower scores represented greater insensitivity to body changes. This questionnaire has been used to measure interoceptive awareness in studies investigating self-objectification (e.g., Ainley & Tsakiris, 2013) and disordered eating (e.g., Myers & Crowther, 2008). The questionnaire has demonstrated strong test-retest reliability and validity (Miller et al., 1981). A Cronbach’s alpha was conducted and showed inadequate internal consistency reliability ($\alpha = .14$). In an attempt to improve the

reliability of the measure, individual items and combinations of items were removed; however, no combination of items yielded a reliability co-efficient above $\alpha = .29$. Low internal consistency reliability has been reported with previous use of this measure (Tiggemann & Slater, 2001; Tiggemann & Kuring, 2004). Given these problems, this questionnaire was not used in further analyses.

3.2.8 Intrinsic Motivation Inventory (IMI; Ryan, 1982) – Interest and Enjoyment Subscale. This 75-item multidimensional measure assesses participants' interest-enjoyment, competence, effort-importance, value-usefulness, pressure-tension, and choice for a specific task or physical activity. For the purpose of this study, the 7-item interest-enjoyment subscale (e.g., "this activity was fun to do") and the 5-item effort-importance subscale (e.g., "I tried very hard on this activity") were used to measure intrinsic motivation for the physical performance tasks. Interest-enjoyment and effort have been shown to reflect higher levels of intrinsic motivation (Ryan, 1982). Items were rated on a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). Items were adapted to reflect the specific physical activity performed (i.e., the balance tasks that will be used for this study). Confirmatory factor analysis by McAuley, Duncan, and Tammen (1989) has suggested adequate reliability and an accurate assessment of psychological constructs included in the measure. A Cronbach's alpha was calculated and showed adequate internal consistency reliability ($\alpha = .81$).

3.2.9 Weight and Body-Related Shame Scale (WBR-S; Conradt et al., 2007). This measure was adapted from the trait measure to reflect state body shame, a self-conscious emotion that occurs when women believe they fail to meet the ideal and attribute this failure to themselves as a bad person. This 6-item measure assesses the

extent to which an individual feels shame about her body (e.g., right now the size of my clothes are embarrassing for me”). Responses were rated on a 4-item Likert scale ranging from 1 (*not at all*) to 4 (*extremely*). A mean score was calculated, with higher scores indicating greater state body shame. The authors presented strong test re-test reliability and validity of the original trait version (Conradt et al., 2007), and adequate reliability of the state version (Cloudt, Lamarche, & Gammage, 2014; Lamarche, Kerr, Gammage, Faulkner, & Klentrou, 2012) has been shown. A Cronbach’s alpha was conducted and showed adequate internal consistency reliability ($\alpha = .90$).

3.2.10 Scent-Consumer Behaviour Questionnaire. This questionnaire was created to uphold the cover story. Participants were asked to smell and rate two unisex scents and rank them in order of likability. Items were labelled 1 and 2; individuals recorded the numbers in the order in which they liked each scent. Participants were also asked to rate each scent on seven items using a 9-point semantic differential scale (e.g., unpleasant-pleasant, dislike-like).

3.2.11 Clothing-Consumer Behaviour Questionnaire. This questionnaire was created to uphold the study’s cover story. Participants were asked to complete nine questions assessing the article of clothing they were wearing (e.g., swimsuit or sweater) from 1 (*strongly agree*) to 5 (*strongly disagree*). Questions include “the article of clothing is a nice colour”, “the article of clothing doesn’t fit well”, and “the material is very comfortable”.

3.2.12 Movement-Consumer Behaviour Questionnaire. This questionnaire was created to uphold the study’s cover story. Participants were asked to complete eight

questions assessing the article of clothing (e.g., swimsuit or sweater) during movement on the balance tasks from 1 (*strongly agree*) to 5 (*strongly disagree*). Questions include “the article of clothing was flexible with my movements”, “the article of clothing was uncomfortable during movements” and “the material was durable during my movements”.

3.2.13 State Interoceptive Awareness. In order to measure participants’ state level of interoceptive awareness, individuals were asked to sit quietly, listen to their bodies, and try to count their own heart rate for 60 seconds (without using their fingers to take their pulse) to determine their perceived heart rate in beats per minute (BPM). Once completed, participants had their actual heart rate assessed (using an automatic blood pressure machine). To measure state interoceptive awareness, a score was calculated using the equation $\{1/3 \sum 1 - (|accurate\ BPM - perceived\ BPM| / accurate\ BPM)\}$. Higher scores indicate greater state interoceptive awareness. This method has been used by Ainley and Tsakiris (2013) to assess state interoceptive awareness.

3.2.14 Balance Tasks. In order to measure physical performance, individuals completed a series of three balance tasks. Three trials of each task were performed. The researcher first demonstrated each task before the participants performed the trials. Blocks of trials were randomized to prevent order effects. Socks and shoes were removed for all balance tasks. These balance tasks were selected because they provided adequate challenge to the participants, while also not requiring an extreme amount of coordination.

3.2.14.1 1-legged eyes closed on foam. Participants were asked to stand on their preferred leg on a 2’ x4’ piece of foam with their eyes closed for as long as they could;

longer times indicated better performance (see Appendix D). Errors occurred that would stop the time included: dropping the lifted foot, hopping, resting their knees against one another, locking together their legs, opening their eyes, or holding onto the researcher.

The researcher would first demonstrate the task and the errors that could occur that would result in the time being stopped. Time started as soon as the participant lifted her leg and ended when an error occurred.

3.2.14.2 Functional Reach. The second task was the Functional Reach test (see Appendix D). The participants stood with their side next to a wall and reached their preferred arm straight in front of their bodies at shoulder height and made a fist. The knuckles of their outstretched arm were aligned with the tape measure (placed at shoulder height) that was located on wall. The participants were asked to inhale and on their exhale reach as far forward as possible while maintaining their balance and keeping their heels on the floor. The participant was reminded that she was not allowed to take a step forward while trying to stand back up. The participant's reach distance was measured by the researcher using the tape measure located on the mirror.

3.2.14.3 Tandem walk with occlusion goggles. Participants were asked to perform a tandem walk (heel-to-toe walking) starting behind a line indicated on the floor, while wearing occlusion goggles to remove vision (see Appendix D). Participants were asked to make ten tandem steps and were instructed to continue tandem walking even if they made an error. They were advised that the researcher or research assistant would indicate when they had completed ten tandem steps. Errors monitored by the researcher include: stepping off their tandem path (side step to gain balance), not having the heel and toe touch, lifting/ touching the occlusion goggles, or holding onto the researcher. If

an error was made, the participant was asked to continue walking until ten steps have been made. Participants were scored on errors made during the walk and time to complete the trial. Shorter time and fewer errors indicated better performance.

3.2.15 Observational Checklist. An observational checklist was used by the researcher to qualitatively assess physical performance during each of the balance tests. Each movement was assessed based on three components of the body: arms, trunk, and legs. For the 1-leg stand and the tandem walk, movement for each bodily component was assessed based on the direction of movement (i.e., towards or away from the midline of the body). For the “arms” bodily component, an extra option for having their arms crossed was added to this scale. This checklist was conducted for all three trials of each task on the 1-leg stand and the tandem walk. No criteria were included on the observational checklist for the functional reach test; because participants had to follow restricted guidelines for correctly performing the test (e.g., feet together, arm straight out and bending at the hips), participants did not have the opportunity to restrict their arm, trunk or leg movements towards the midline of the body and perform a trial that could be included.

3.2.16 Clothing. The clothing that was chosen for this study was purchased from Joe Fresh, and was provided in a range of sizes: XS-XL. The sweater was chosen because it provided a loose-fit, however was still aesthetically pleasing (see Appendix E). The swimsuit that was chosen provided modest coverage (e.g., bust and butt coverage), while still allowing for bodily-areas to be revealed for self-objectification to occur (see Appendix E).

3.3 Procedure

Ethics clearance was obtained from the Brock University Research Ethics board prior to study commencement (REB# 14-121). Participants were invited to participate in a study entitled “Consumer Behaviours and Self-Perceptions in University Women” that required them to provide feedback on several products. Individuals interested in participating in the study were asked to contact the Student Principal Investigator by e-mail. Once contacted, the researcher provided a letter of invitation (see Appendix F), which outlined the study’s purpose and all inclusion and exclusion criteria. If the participant was still interested and eligible, the researcher scheduled a mutually convenient day and time to meet. All testing occurred in Welch Hall 16 (WH16). Once a scheduled meeting was confirmed by the participant, the researcher then randomized her into either the swimsuit or sweater group without her knowledge. A visual depiction of the testing procedures is presented below.

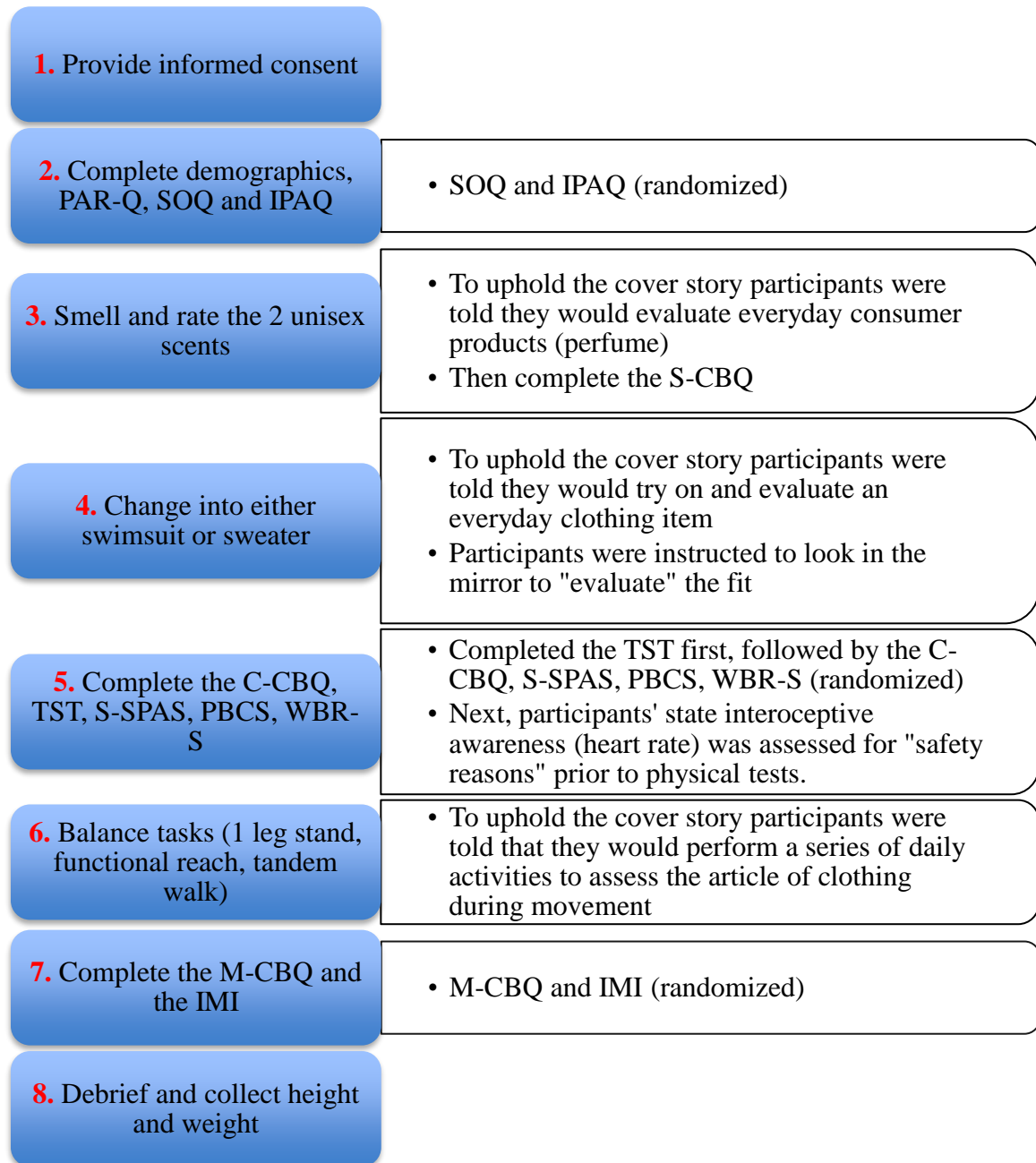


Figure 2. Process flow chart

Upon arrival at the lab, the participant was asked to provide informed consent (see Appendix G). After giving informed consent, the participant completed the PAR-Q, which all participants cleared. The participant then completed the demographic

information, the IPAQ, and the Trait Self-Objectification Questionnaire. The IPAQ and the Trait Self-objectification questionnaire were randomized.

Participants were then asked to evaluate two unisex scents (presented in a random order), in order to uphold the cover story, followed by the completion of the Scent-Consumer Behaviour Questionnaire. They were able to take as much time as required to evaluate and rate the product.

Next, the participant was instructed that she would try on and evaluate an article of clothing. Participants were shown a private room located within the lab that contained various sizes of swimsuit bottoms and tops (ranging from extra small to extra-large) or sweaters (ranging from extra small to extra-large), consistent with their group assignment. They were then instructed to pick whichever size of clothing they thought would fit them best (and continue until they found the appropriate size). Once the participant was wearing the article of clothing in the correct size, she was instructed to look into the mirror located inside the room to evaluate the fit. Participants then completed a series of questionnaires including the TST, followed by the Clothing-Consumer Behaviour Questionnaire (to uphold the studies cover story), the S-SPAS, WBR-S, and the PBCS. These measures were randomized order to prevent order effects. Next, participants were told they would complete a series of tasks; however before they performed the tasks, for safety reasons they were to have their heart rate and blood pressure measured. Participants were asked to sit quietly, listen to their bodies, and try to count their heart rate without using their fingers for 60 seconds. Next, participants had their actual heart rate assessed using the automatic blood pressure machine.

Once the measures were completed, the participant was advised that she would perform some physical activities to determine the article of clothing's durability, flexibility and comfort during movement to assess whether the product would be ideal for future consumers to purchase and use in daily activities. Participants were asked to remove their shoes and socks, and perform three balance tasks (1-leg stand, functional reach, and tandem walk). The sequence of balance tasks were randomized for each participant. Upon completion of the balance tasks, the participant completed the Movement-Consumer Behaviour Questionnaire to uphold the cover story, as well as the IMI (randomized).

Upon completion, participants returned the questionnaire packages, changed into their regular clothing, were fully debriefed on the true purpose of the study, and had their height and weight taken by the researcher. Final consent (see Appendix F) was then provided by participants.

3.4 Data Analysis

3.4.1 Data Accuracy. Data was checked for implausible values that may have been entered during data entry using frequencies.

3.4.2 Treatment of Missing Data. Missing data was screened visually using frequencies. For cases where data from an entire questionnaire were missing, the participant's data from that questionnaire was not used for analysis. Where specific items were missing, visual inspection was used to determine if the quantity and pattern of the missing items were random. If less than 5% of the data was missing and it was considered random, a series mean was calculated for the appropriate subgroup to substitute for the

missing values. There were only two instances where missing data occurred from the entire data set.

3.5 Scale Scoring

3.5.1 Data Recoding and Scale Calculation. Data was recoded where necessary. Subscales were calculated where necessary, according to procedures outlined above. Where appropriate, internal consistency reliability (Cronbach's alpha) was calculated for each subscale.

3.5.2 Descriptive Statistics. Means, standard deviations, and correlations were calculated to provide descriptive information. Correlations between BMI, trait self-objectification and state measures (SPA, WBRGS, TST, PBCS, state interoceptive awareness, and IMI) were calculated.

3.6 Data Screening

3.6.1 Univariate Normal Distribution. The assumption of a normal distribution is that the data are a symmetrical bell shaped curve implying that the data is evenly distributed on each side of the mean (Field, 2013). This assumption was measured through values of skewness and kurtosis for each variable by group. Values greater than +3 or -3 indicates a non-normal distribution. When necessary, transformations were made to ensure the data resembles normal distribution.

3.6.2 Univariate Outliers. According to Field (2013) outliers challenge the normality of the data because they are extreme values. Potential outliers can be identified by z-scores greater than 3.29 ($p < 0.001$, two-tailed test). If potential outliers were

identified, their values were adjusted to fall within one standard deviation of the most extreme value.

3.6.3 Multivariate Outliers. This assumption was checked by examining Mahalanobis' distance. Mahalanobis' distance measures the distance of cases from the mean along the distribution (Field, 2013) and indicates cases where there is an unusual combination of scores on multiple variables. Values that exceed the critical value (evaluated by the chi-square based on degrees of freedom) are classified as multivariate outliers. For those cases where values exceeded the critical value, outliers were deleted or transformed to fall within the distribution.

3.7 Assumptions. Assumptions for all statistical analysis were checked to ensure no assumptions were violated.

3.7.1 Linearity. Linearity ensures that each variable lies along a straight line; if there is a non-linear relationship then this will limit the generalizability of the findings (Field, 2013). Linearity was checked by visually inspecting scatter plots created for all possible combinations of variables. The data should look as if all points are moving in the same direction near the line of best fit.

3.7.2 Multicollinearity. Multicollinearity exists when there is a very strong correlation between two or more variables (Field, 2013). Multicollinearity was identified by visually scanning a correlation matrix of all combinations of variables to see if any were very highly correlated (above 0.90). If $r > .90$, one variable was used for further analysis.

3.7.3 Homogeneity of Covariance Matrix. Homogeneity of variance indicates approximately equal variances across all groups for the independent variable. This assumption is tested using Levene's Test for Equality of Variance when conducting an ANOVA or Box's M for a MANOVA. Non-significant values for these tests indicate this assumption has been met. If the Levene's Test for Equality of Variance or Box's M indicated significant values, the variance ratios were investigated to ensure the variation between dependent variables was fairly similar within each group. The analysis could still proceed with the significance value from the Levene's Test for Equality of Variance or Box's M, however results from further analysis would be tenuous and would make it harder to draw any conclusions from the data (Field, 2013).

3.7.3 Distribution of Degrees of Freedom. For the Pearsons' Chi-Square test categories were examined to determine if less than 5% of the data existed in a category for the observational checklist. If less than 5% of the data exists, then categories are collapsed in attempt to increase the number of participants in each category. If there only remains two categories in the Chi-Square analysis and less than 5% of the data remains in one category despite collapsing groups, a Fishers Exact Test will be used on the contingency tables. In instances where less than 5% of the data exists on contingency tables greater than 2x2, a Fisher Freeman Halton Test will be used.

3.8 Identification of Potential Covariates

A covariate is a variable that has a relationship, or can influence an outcome measure (Field, 2013). If BMI, physical activity, and/or trait objectification were significantly related to the dependent variables as indicated by bivariate correlations, then they were included as covariates in the analysis.

3.9 Manipulation Checks

3.9.1 Randomization. A series of independent t-tests was conducted to ensure there were no differences on basic demographic variables, physical activity, and trait self-objectification between the groups to ensure that randomization was effective.

3.9.2 Effectiveness of Manipulation. In addition, using an independent t-test, the TST was used as a manipulation check to determine if the manipulation was effective at manipulating state self-objectification. Higher TST scores (means) should be evident in the swimsuit condition. A t-test was also used to verify that state body shame was higher in the swimsuit compared to the sweater condition.

3.10 Hypothesis Testing

3.10.1 Research Questions 1-3. A Multivariate Analysis of Variance (MANOVA) was conducted to test the first three hypotheses that self-objectification would result in greater social physique anxiety, poorer intrinsic motivation and poorer interoceptive awareness. Group (swimsuit versus sweater) served as the independent variable, and SPAS, IMI and state interoceptive awareness scores served as the dependant variables. If potential covariates were identified (e.g., BMI, physical activity, and trait self-objectification) from significant correlations, then they were included in the analysis. If the overall MANOVA was significant, a series of ANOVAS were conducted to determine where the significant differences lie.

3.10.2 Research Question 4. To test the fourth hypothesis that self-objectification would result in restricted direction of movement, 36 χ^2 tests were conducted in total. Nine χ^2 tests were conducted for each bodily segment (arms, trunk,

and legs) for three trials for direction of movement (towards or away from the midline) during the tandem walk, and nine χ^2 tests were conducted for each bodily segment for direction of movement (towards or away from the midline) during the 1-leg stand.

3.10.3 Research Question 5. A MANOVA was conducted to test the fifth hypothesis that self-objectification would result in poorer performance on the balance tasks. Group (swimsuit versus sweater) served as the independent variable, and the duration of one leg stand, distance on the functional reach, and time and errors on the tandem walk served as the dependant variables. If potential covariates were identified (e.g., BMI, physical activity, and trait self-objectification) from significant correlations, then they were included in the analysis if needed. If the variables of the MANOVA were significant, a series of ANOVAS was conducted to determine where the significant differences were.

CHAPTER FOUR: RESULTS

4.1 Data Screening

4.1.1 Missing data. Before the data was analyzed, it was screened for missing data using frequencies. Visual inspection confirmed there were no cases of missing data.

4.1.2 Inaccurate Values. Frequencies were also used to screen for accuracy of data. There were no cases where inaccurate or implausible values were found.

4.1.3 Calculation of Subscales. Two items were reverse coded on the SPA questionnaire and four items were reverse coded on the IMI questionnaire. Subscale scores were created for each questionnaire as described in Chapter 3. Higher scores on the SPA questionnaire indicate higher levels of social physique anxiety, higher scores on the IMI indicate greater amounts of intrinsic motivation, higher scores on IA indicate greater amounts of state interoceptive awareness, higher scores on the SOQ indicate greater amounts of appearance-related trait self-objectification, and higher TST scores indicate greater amounts of state self-objectification.

4.1.4 Univariate Outliers. Two potential outliers were found by visually inspecting the z-scores; one participant had an interoceptive awareness z-score of 3.52, and the other z-score of 4.72 for standing time. Both outliers were replaced with a series mean.

4.2 Descriptive Statistics

Means and standard deviations were calculated for all psychological variables (see Table 2) and all performance measures (see Table 3).

Table 2

<i>Means (SD) for Psychological Measures by Condition</i>		
Variable	Swimsuit	Sweater
TST	5.71 (3.32)	3.89 (1.91)*
SOQ	-3.79 (11.31)	-4.93 (12.73)
IA	0.22 (0.09)	0.22 (0.73)
WBRS	1.52 (0.92)	0.89 (0.95)**
IMI	4.94 (0.74)	5.47 (0.73)**
SPA	3.21 (1.25)	2.50 (0.79)**

Note. TST = twenty statements test, categories of 'weight and shape' and 'other physical appearance'; SOQ = trait self-objectification, +25 to -25; IA = state interoceptive awareness; WBRS = body shame, ranges 0-4; IMI = intrinsic motivation, ranges 1-7; SPA = social physique anxiety, ranges 1-5.

* $p < .05$

** $p < .01$

Table 3

<i>Means (SD) for Performance Measures by Condition</i>		
Variable	Swimsuit	Sweater
Standing Time	12.80 (9.40)	15.19 (15.05)
Tandem Time	10.68 (3.49)	10.13 (2.72)
Tandem Errors	2.09 (1.84)	1.63 (1.66)
Reach Distance	37.24 (7.30)	40.24 (7.05)

Note. Values represent the average of the three trials of each performance measure. Reach distance in centimeters; and time is reported in seconds.

4.3 Assumptions

4.3.1 Univariate Normal Distribution. Skewness and kurtosis values were calculated to check for indicators of deviations from the assumption of normality. All

values for the dependent variables fell within the acceptable range of +3 to -3 (Field, 2013) to indicate normal distribution with one exception. A kurtosis value of 3.1 was reported for standing balance, however after inspecting the histogram, the data was normally distributed. Therefore, no transformations were made.

4.3.2 Multivariate Outliers. Mahalanobis' distance was calculated to identify potential multivariate outliers. One potential outlier was identified with a Mahalanobis' distance of 17.61, given the critical value at $\chi^2 = 16.27$; after looking at the case it was retained in the data analysis. The case was retained because the participant's data for psychological measures followed the pattern of other participants within the swimsuit group.

4.3.3 Multicollinearity. A correlation matrix of all dependent variables was examined. No correlations exceeded .90.

4.3.4 Homogeneity of Co-Variance Matrix. Box's M was calculated for each MANOVA to assess the assumption of equal variance across all groups. The Box's M produced non-significant values for each analysis.

4.3.5 Distribution of Degrees of Freedom. For the Pearson's χ^2 tests, categories were examined to determine if there was an appropriate sampling distribution among performance measures on the observational checklist. There were several categories with less than 5% of the data. Therefore, categories were collapsed for the arm category on the tandem walk and 1-leg stand, options of "crossed" and "towards the midline" were collapsed together. In cases where less than 5% of the data still existed within these categories for 2x2 contingency tables, a Fisher's Exact Test was used to report the

significance statistic. In situations where contingency tables were greater than 2x2, a Fisher Freeman Halton's Test was used to report significance levels if less than 5% of the data still existed (Osborne, 2008).

4.5 Identification of Potential Covariates

Bivariate correlations between BMI, trait self-objectification, physical activity, and state dependent measures (SPA, WBRSG, IA, and TST) were calculated to identify any potential covariates for subsequent analyses (see Table 4). BMI was moderately correlated with WBRSG and TST in the swimsuit group, as well as SPA in the sweater group. Therefore, BMI was included as a covariate in further analyses. Bivariate correlations were also conducted between BMI, trait self-objectification, physical activity, and performance measures (standing time, tandem time and errors, and reach distance) to determine if there were any potential covariates for subsequent analyses (see Table 5). No significant correlations between BMI, trait self-objectification, physical activity and performance measures were found for the swimsuit group.

Table 4

Bivariate Correlations Between Psychological Variables by Condition

	BMI	SOQ	IPAQ	SPA	WBRS	IA	TST
BMI	-	-.09	-.02	.43*	.56**	.19	.08
SOQ	.17	-	.29	.03	-.02	-.03	.04
IPAQ	.09	.18	-	.11	.15	.04	.34
SPA	.39	-.03	-.04	-	.59**	.12	.01
WBRS	.43*	.05	.13	.79**	-	-.05	-.05
IA	-.03	-.05	.16	.15	-.04	-	.12
TST	.44*	.25	.27	.32	.55**	-.05	-

Note. Values for sweater group shown above the diagonal, and for swimsuit group below the diagonal. SOQ = trait self-objectification, IPAQ = physical activity; SPA = social physique anxiety, ranges 1-5; WBRS = body shame, ranges 0-4; IA = state interoceptive awareness; TST = twenty statements test, categories of 'weight and shape' and 'other physical appearance'

* $p < .05$

** $p < .01$

Table 5

Bivariate Correlated Between Performance Measures by Condition

	BMI	SOQ	IPAQ	ST (Avg)	TT (Avg)	TE (Avg)	Reach
BMI	-	-.09	-.02	.83	.33	.05	-.03
SOQ	.17	-	.29	-.14	-.08	.29	-.33
IPAQ	.09	.18	-	-.04	-.20	-.07	.07
ST	-.38	-.05	.01	-	-.06	.06	-.13
TT	.21	-.02	-.18	-.16	-	-.07	-.18
TE	-.31	.01	.25	.18	-.32	-	-.22
Reach	-.19	-.17	.24	.18	-.07	-.09	-

Note. Values for sweater group shown above the diagonal, and for swimsuit group below the diagonal. SOQ = trait self-objectification, IPAQ = physical activity; ST = standing time; TT = tandem time; TE = tandem errors, Reach = distance reached on functional reach test. Values represent the average of the three trials for ST, TT, and TE.

* $p < .05$

** $p < .01$

4.6 Randomization Check

A series of independent t-tests were conducted to ensure there were no differences between groups on basic demographic information, physical activity, BMI, and trait self-objectification. Results showed there were no significant differences on any variable (all $ps > .05$); therefore, randomization was effective for demographic information, physical activity, BMI, and trait self-objectification. Independent t-tests were also conducted to ensure no differences between groups on blocks randomized for balance tasks. Results showed there were no significant differences on all blocks between groups (all $ps > .05$); therefore, randomization of blocks was effective.

4.7 Manipulation Check

An independent samples t-test was conducted to determine whether the self-objectification manipulation was effective. The Levene's Test for Equality of Variance was significant ($p = .006$), therefore equal variance was not assumed. The results showed that state self-objectification was significantly higher in the swimsuit group than in the sweater group ($t(36) = -2.37, p = .024$). Therefore, the manipulation was effective with those in the swimsuit group reporting higher state self-objectification compared to those in the sweater group (see Table 2).

4.8 Hypothesis Testing

To determine if there were any differences between groups on the dependent variables, two MANOVAs were conducted. As previously determined, BMI was entered as a covariate for the first MANOVA examining differences in psychological variables.

4.8.1 Hypothesis 1-3. To test the hypothesis that higher self-objectification would result in greater amounts of social physique anxiety, poorer intrinsic motivation, and poorer interoceptive awareness, a MANCOVA was conducted. Group represented the independent variable, whereas SPA, IMI, and state interoceptive awareness represented the dependent variables. BMI was entered into the MANCOVA, and was a significant covariate. Results revealed a significant multivariate effect of group (swimsuit or sweater) on the combination of psychological measures, Pillai's Trace, $F(4, 46) = 2.90$, $p < .05$, $\eta_p^2 = .20$, observed power = .74.

Given the significance of the multivariate test, the univariate main effects were examined. Significant univariate main effects were obtained for body shame, $F(1, 26) = 7.96$, $p = .01$, $\eta_p^2 = .14$, intrinsic motivation, $F(1, 26) = 6.53$, $p = .01$, $\eta_p^2 = .12$, and appearance anxiety $F(1, 26) = 7.20$, $p = .01$, $\eta_p^2 = .13$. There was no significant univariate main effect for interoceptive awareness, $F(1, 26) = .24$, $p = .63$, $\eta_p^2 = .08$. Examination of means showed those in swimsuit group experienced greater amounts of body shame, were less intrinsically motivated to perform the balance tasks, and experienced greater amounts of social physique anxiety than those in the sweater group (see Table 2 for all means).

4.8.2 Hypothesis 4. To test the hypothesis that self-objectification would result in restricted direction of movement (i.e., those in the swimsuit group would make movements away from the midline of the body), nine 2×3 χ^2 tests were conducted for tandem walk, and nine 2×3 χ^2 tests were conducted for the 1-leg stand. Chi-Squared's were conducted on each level of bodily segments (arms, trunk, and legs) for each trial. Results revealed that during the 1-leg stand, individuals in the sweater condition used

greater amounts of bodily space on all levels of bodily segments (arms, trunk, and legs were away from the midline of the body; see Table 6), however very few significant findings were noted during the tandem walk (see Table 7).

Table 6

Summary of χ^2 tests for *1-Leg Stand*

	Trial 1				Trial 2				Trial 3			
	df	N	χ^2	<i>p</i>	df	N	χ^2	<i>p</i>	df	N	χ^2	<i>p</i>
Arms	1	52	1.63	.20	1	52	10.31	< .01**	1	52	8.68	< .01**
Trunk	1	52	3.71	.05*	1	52	5.97	.01**	1	52	4.92	.03*
Legs	1	52	9.06	< .01**	1	52	12.97	< .01**	1	52	15.90	< .01**

Note. Space = arms moving away or towards the midline, trunk flexing forward or upright, and legs moving away or towards the midline.

* $p = .05$; ** $p = .001$

Table 7

Summary of χ^2 tests for *Tandem Walk*

	Trial 1				Trial 2				Trial 3			
	df	N	χ^2	<i>p</i>	df	N	χ^2	<i>p</i>	df	N	χ^2	<i>p</i>
Arms	1	52	3.48	.06	1	52	4.95	.03*	1	52	2.66	.10
Trunk	1	52	2.51	.15	1	52	4.31	.06	1	52	4.31	.06
Legs	1	52	5.38	.03*	1	52	.21	1.0	1	52	3.37	.20

Note. Space = arms moving away or towards the midline, trunk flexing forward or upright, and legs moving away or towards the midline.

* $p = .05$; ** $p = .001$

Overall, results revealed that during the 1-leg stand, individuals in the swimsuit condition exhibited more restricted bodily movements by refraining from letting their arms, trunk, and legs extend pass the midline of the body (see Table 8).

Table 8

Descriptives for Bodily Space by Condition

Variable	Swimsuit	Sweater
Standing Arm Space	4.00 (2.17)	5.68 (.82)
Standing Trunk Space	3.21 (2.02)	5.00 (1.19)
Standing Leg Space	3.25 (2.01)	5.21 (1.10)
Tandem Arm Space	3.33 (2.48)	4.40 (1.97)
Tandem Trunk Space	1.04 (1.04)	2.29 (1.78)
Tandem Leg Space	3.13 (3.13)	3.39 (.73)

Note. Contains the average of the sum of three trials. Scores range from 0-6; higher scores indicating greater use of bodily space.

* $p = .05$

** $p = .001$

4.8.2 Hypothesis 5. To test the hypothesis that state self-objectification would result in poorer performance on the balance tasks, a MANOVA was conducted. Group represented the independent variable, whereas time and errors on the tandem walk, time on the 1-leg stand, and distance on the reach test represented the dependent variables. Results revealed a non-significant multivariate effect for group (swimsuit or sweater) on the combination of objective performance outcomes, Wilks' $\lambda = .59$, $F(5, 46) = .76$, $p = .53$, $\eta_p^2 = .08$. The initial MANOVA was non-significant, therefore no further analyses were conducted.

CHAPTER FIVE: DISCUSSION

The main objective of this study was to examine the impact of manipulated state self-objectification on social physique anxiety, intrinsic motivation, and interoceptive awareness, as well as physical performance, in female university students. Specifically, it looked at whether state self-objectification led to higher social physique anxiety, lower intrinsic motivation and interoceptive awareness, poorer performance accuracy on balance tasks, and restricted bodily movements and direction of movement during balance tasks.

Consistent with the hypothesis, women in the swimsuit group reported greater amounts of state self-objectification and reported higher social physique anxiety and body shame, and lower intrinsic motivation, than women in the sweater group. There was no difference in interoceptive awareness. Furthermore, women in the swimsuit group also restricted the direction of movement (i.e., keeping limbs towards the midline of the body) during balance tasks. Lastly, there were no group differences found in performance (time and errors on the tandem walk, distance on the functional reach, and time on the 1-leg stand).

5.1 Sample Characteristics

According to Health Canada (2016), the healthy range of BMI for adults in Canada is 18.5 to 24.9. The sample groups reported mean BMIs of 22.83 and 22.89 respectively, in the healthy range. In regards to moderate/vigorous physical activity, the sample reported being physically active, with both groups reporting greater than 1500 METs/week indicating they were active based on IPAQ scores (Craig et al., 2003).

Finally, trait self-objectification values reported by women in our study are consistent with those from previous studies (Calogero, 2004; Fredrickson et al., 1998; Fredrickson & Harrison, 2005). Thus, the sample overall was a healthy, active group.

5.2 Manipulation Checks

In reference to state self-objectification, women in the swimsuit condition reported greater numbers of weight/shape and physical appearance statements than women in the sweater group. This is consistent with previous studies that also reported greater amounts of self-objectification in the swimsuit condition compared to the sweater condition (Fredrickson et al., 1998; Quinn et al., 2006). It is important to note that although mean scores are rather low, they are consistent with previous studies (Fredrickson et al., 1998; Quinn et al., 2006). Statements are organized into six categories, and self-objectification is indicated by only two of the six categories. Thus, it is not surprising that overall scores are generally low.

Furthermore, women in the swimsuit condition reported greater levels of state body shame than those in the sweater condition. This is consistent with findings by Quinn and colleagues (2006) who reported that women in the swimsuit condition reported greater levels of body shame than those in the sweater condition. In addition, several correlational findings (Aubrey, 2006; Calogero, 2004; Greenleaf & McGreer, 2006; Martins et al., 2007) and experimental findings (Fredrickson et al., 1998; Monro & Huon, 2005) have supported the relationship between self-objectification and higher in body shame.

5.3 Hypothesis 1: Social Physique Anxiety

Results indicated that women in the swimsuit condition experienced greater amounts of social physique anxiety than those in the sweater condition. This finding is consistent with our hypothesis. Correlational studies have generally shown a positive relationship between self-objectification and appearance anxiety (Aubrey, 2006; Greenloaf & McGreer, 2006; Szymanski & Henning, 2007; Tiggemann & Kuring, 2004). Monro and Huon (2005) induced state self-objectification by using media images of the ideal, and also found that self-objectification led to higher appearance anxiety. Few studies have specifically examined self-objectification and social physique anxiety. Those that have, have found a positive relationship. Calogero (2004) found that women who anticipated interacting with a male stranger (which should lead to objectification related to the “male gaze”) reported higher social physique anxiety compared to women anticipating an interaction with a women. Although they did not measure self-objectification explicitly, the author supported that being the subject of another person’s gaze and evaluation, specifically from men, is at the core of self-objectification. The present study remains one of the few studies to have taken an experimental approach to examine and report increases in appearance-related anxiety.

Objectification theory (Fredrickson & Roberts, 1997) explains that self-objectification leads to greater focus on outer appearance, which in turn, results in woman acting as their “own first surveyors”. Evaluating one’s appearance should lead to increased anxiety related to both appearance and safety. Appearance anxiety is thought to arise when women do not know when or where someone will view their bodies. In the

present study, this concern over the body being evaluated by others (i.e., social physique anxiety) occurred to a greater extent in the objectifying condition (i.e., swimsuit group). This is likely due to the fact that in the swimsuit condition, women's bodies were easily accessible to be viewed and evaluated by others, particularly compared to those in the sweater condition. Our findings were consistent with the theory, which posits that self-objectification resulted in greater appearance anxiety, specifically, anxiety related to outcomes evaluated by others viewing or watching one's physical appearance.

5.4 Hypothesis 2: Intrinsic Motivation

The ability to become fully absorbed in a task both mentally and physically is referred to as being in a state of flow (Csikszentmihalyi, 1990). Flow is associated with feelings of happiness, calmness and enjoyment. One indicator of flow is intrinsic motivation (Csikszentmihalyi, 1990). Intrinsic motivation refers to doing something purely due to interest, challenge, or enjoyment (Ryan & Deci, 2000). If one does not think a task is interesting, challenging or enjoyable, it becomes extremely difficult to be intrinsically motivated, and thereby achieve a state of flow. Nakamura and Csikszentmihalyi (2009) suggest that flow highlights the phenomenology of optimal experience, and can ultimately contribute to one's quality of life by allowing someone to be completely absorbed in what she does.

Results indicated that women in the swimsuit condition reported lower amounts of intrinsic motivation for the balance tasks than those in the sweater condition. These findings are consistent with our hypothesis and objectification theory, and with findings by Tiggemann and Kuring (2004) who correlationally investigated self-objectification

and flow and found that self-objectification was positively associated with self-surveillance, which was negatively associated with flow. Findings are also consistent with Gapinski and colleagues (2003) who found that self-objectification experienced among women in the swimsuit group was associated with decreased amounts of intrinsic motivation. It is important to note that this study used a cognitive task and an assessment of intrinsic motivation using the Work Preference Inventory.

According to objectification theory, flow, or peak motivational state, can become limited by experiencing states of self-consciousness (Fredrickson & Roberts, 1997). As women become preoccupied with their physical appearance, peak states such as intrinsic motivation are negatively affected. Objectification theory suggests that as women engage in self-objectification, they think about their outer physical appearance more. They become so preoccupied with how they look, that they fail to enjoy the task or its challenges, in which they are engaged. Women who self-objectify experience greater feelings of self-consciousness (Fredrickson & Roberts, 1997), which has the ability to disrupt one's thoughts and feelings. Specifically, in the present study, women in the swimsuit condition were more concerned with their physical appearance (as demonstrated by their higher self-objectification scores), which likely limited their attention during the balance tasks. It is possible that these women were unable to enjoy the challenges of the tasks and experience intrinsic motivation, as experiencing self-objectification serves as a disruption to one's attention, allocating resources to the body and to monitoring appearance of the body, instead of the task at hand. Moreover, allocating resources to monitor the body leads to worse performance on the balance tasks.

5.5 Hypothesis 3: Interoceptive Awareness

Results showed there was no group difference on interoceptive awareness, contrary to the hypothesis. Our finding is inconsistent with objectification theory (Fredrickson & Roberts, 1997), which posits that women become so aware of their outer bodily appearance they have fewer perceptual resources to detect and monitor their inner bodily experiences. Our findings are also inconsistent with previous correlational research findings, which has shown either a positive (Myers & Crowther, 2008), or negative (Tiggemann & Kuring, 2004; Slater & Tiggemann, 2002; Muehlenkamp & Saris-Baglama, 2002; Tiggemann & Williams, 2012) relationship between self-objectification and interoceptive awareness. There are several reasons for these differences.

First, differences may be associated with the measurement of interoceptive awareness. Myers and Crowther (2008) objectively measured trait interoceptive awareness using a questionnaire. Ainley and Tsakiris (2013) subjectively measured interoceptive awareness using a Mental Tracking Method and a pulse monitor. Our study used a similar subjective protocol to Ainley and Tsakiris (2013), however did not include a practice trial followed by three actual trials to determine perceived heart rate.

Secondly, trait and state measurements of interoceptive awareness have provided inconsistent findings on the relationship between interoceptive awareness and self-objectification. Myers and Crowther (2008) assessed trait levels of self-objectification and found a positive relationship with self-objectification, meaning those with greater levels of trait self-objectification reported greater interoceptive awareness. By contrast,

Ainley and Tsakiris (2013) assessed state levels of interoceptive awareness to determine that self-objectification was negatively associated with state interoceptive awareness. Thirdly, the assessment of interoceptive awareness varies between studies. Previous research has only been conducted correlationally (Muehlenkamp & Saris- Baglama, 2002; Myers & Crowther, 2008; Tiggemann & Kuring, 2004; Slater & Tiggemann, 2002; Tiggemann & Williams, 2012; Ainley & Tsakiris, 2013). The present study remains one of the first to take an experimental approach to investigating self-objectification and interoceptive awareness.

Lastly, there are inconsistencies in the literature on the type of internal sensations that are measured. Several researchers have investigated interoceptive awareness as one's internal state of physical and emotional feelings related to hunger and satiety (Muehlenkamp & Saris- Baglama, 2002; Myers & Crowther, 2008; Slater & Tiggemann, 2002; Tiggemann & Williams, 2012), while other researchers investigated interoceptive awareness as one's awareness of their internal bodily signals, such as heart rate (Tiggemann & Kuring, 2004; Ainley & Tsakiris, 2013). In general, perhaps feelings of hunger and satiety may be more closely related to one's self-objectification since these feelings are more closely related to physical appearance.

Overall, the lack of consistency of findings may be attributed to the inconsistencies in the assessment (e.g., subjective vs. objective), type (state vs. trait), design (correlational vs. experimental) and definition (hunger/satiety vs. physiological states) of interoceptive awareness across studies.

5.6 Hypothesis 4: Direction of Movements

It was hypothesized that individuals in the swimsuit condition would exhibit smaller movements and keep their arms and legs towards the midline of their bodies, compared to women in the sweater condition. Results indicated that self-objectification resulted in restricted bodily movements (i.e., direction of movements) for the 1-leg stand, but not for tandem walk. This finding is consistent with Fredrickson and Harrison (2005) who found that self-objectification predicted throwing performance in adolescent girls. Specifically, their results showed that adolescent girls who were higher in self-objectification (as assessed by a combination of state and trait self-objectification as well as thoughts during performance) changed the nature of their throwing performance on the throwing task, based on the subjectively assessed biomechanics of the throw. Specifically, they found women had smaller movements during the softball throws when they were higher in self-objectification.

It is possible that one reason that restricted movements were made as an attempt to hide the body (e.g., arms, trunk, and legs were towards the midline which provided greater coverage). Our findings are consistent with objectification theory (Fredrickson & Roberts, 1977), which posits that girls and women's actions grow uncertain and hesitant when they self-objectify, avoiding invading physical space around them, and drawing attention to themselves. Women in the swimsuit condition may have wanted to avoid drawing attention to their physical self as they may have felt more vulnerable in the revealing clothing they were wearing. By keeping their arms, trunk, and legs towards the midline of the body, they could have hidden the body from view in attempt to hide and

draw away attention, or cover up. These findings are also consistent with behavioural indicators of shame, which may make one feel the need to hide, disappear, and escape (Fredrickson & Roberts, 1997). For example, researchers have noted non-verbal behavioural indicators of shame (e.g., rounding the shoulders, head tilting down.), when placed in a stressful environment (Tracy & Matsumoto, 2008).

It is also important to note that actions that were made by the arms, trunk, and leg during the 1-leg stand were all in the hypothesized direction. Consistent with objectification theory, women who experienced increases in state self-objectification (those in the swimsuit condition) would bring their limbs towards the midline of the body. The restricted movements and inward direction of movement made by the swimsuit condition is consistent with objectification theory (Fredrickson & Roberts, 1997) which posits that girls' and women's actions grow uncertain and hesitant when they self-objectify, leading to smaller movements to avoid invading physical space around them, and drawing attention to themselves.

It is acknowledged that although these findings occurred when considering the 1-leg stand, during the tandem walk there was generally no difference between the two groups. This could have been due to the nature of these tasks themselves. The instructions to perform the tandem walk (i.e., walk in a straight line insuring your heels to toe touch) could have inhibited the women from being able to make larger movements and use greater amounts of space in order to actually perform the task correctly. By contrast, during the 1-leg stand, the types of movements women were allowed to make were unrestricted.

5.7 Hypothesis 5: Objective Performance Outcomes

It was hypothesized that state self-objectification would result in shorter times during the 1-leg stand, shorter distances on the functional reach test, and longer times and more errors on the tandem walk. However, inconsistent with our hypothesis, no significant group differences were found. It is important to note, however, that means reported were in the appropriate direction, where women in the swimsuit condition were unable to stand as long during the 1-leg stand, made more errors on the tandem walk, and were unable to reach as far on the functional reach test, compared to women in the sweater condition.

In comparison to previous research, a study conducted by Gill and colleagues (2001) had young adults (aged 12-25) stand on 1-leg on a foam support surface with eyes open. Gill and colleagues (2001) reported average stance duration of the young adult subjects was 18.51 seconds. In the present study, the average stance duration for participants in this study during the 1-leg stand were 12.80 seconds (swimsuit) and 15.19 seconds (sweater), suggesting performance for participants in the current study was slightly poorer than previous research.

Our findings are also inconsistent with objectification theory (Fredrickson & Roberts, 1997) which suggests that viewing the body from a third person perspective ultimately leads to a disruption or shift in attention towards physical appearance and takes away from mental resources needed to perform physical or cognitive tasks. Our findings are also not aligned with previous studies who have demonstrated that self-objectification can impede performance on cognitive tasks (Quinn et al., 2006). Quinn and colleagues

(2006) demonstrated through their cognitive task that mental resources became diminished and reaction time was slower among those in the swimsuit condition who experienced increases in state self-objectification.

Our lack of differences could have been the result of the tasks selected. First, the tasks may not have been challenging enough to allow participants to make errors during performance (e.g., drop their foot during the one leg stand or a side step during the tandem walk). For example, reaching forward during the functional reach task may have been too easy, as evidenced by the fact that everyone performed well. A more difficult balance task, such as a rocker board or perturbation board may have resulted in greater differences among groups.

Another suggestion for future tasks is to include balance activities that require a large-recovery movement such as responding to a perturbation which may require a step or movement of the arms to maintain balance. This may be specifically meaningful to measurements of anxiety and self-objectification in the context of objectification theory; more restricted movements are indicative of greater amounts of shame, anxiety and self-objectification. Alternatively, perhaps using a task that is more specific and goal oriented, such as dart throwing, free throws, or slap shots, may have been more meaningful to the participants who could more easily assess their performance.

Secondly, our sample represented an active group of individuals. Due to the highly active nature of our sample, they may have been able to perform better on the balance tasks. Fredrickson and Harrison (2005) were able to demonstrate that self-

objectification was associated with poorer physical performance as shown in a throwing task with adolescent girls. However, we were unable to demonstrate that self-objectification was able to disrupt the accuracy of performance (i.e., time and errors). Unlike the study by Fredrickson and Harrison (2005), we focused on objective outcomes of the tasks, such as time and errors created by participants. In comparison, Fredrickson and Harrison (2005) qualitatively assessed how hard their participants threw a softball. In addition, unlike Fredrickson and Harrison (2005), our study design contained a control group and was experimental in nature.

It is also important to note in terms of performance that there may have been two ways of getting to the same outcomes in the balance tasks. Participants could have used two different strategies that would have led to improved balance (i.e., holding their arms out to their sides to improve stability by counteracting trunk movement or holding their arms closer to their body to minimize trunk movements). Further, determining where the individual's focus of attention was during the task may be a meaningful next step moving forward. Specifically, whether participants used an internal or external focus of attention during the task could be assessed as during the current study, it was unknown where their attention was focused. Depending on the nature of the tasks for future studies, novice versus experts may shift attention differently to achieve the best performance.

5.8 Limitations

The findings from this study help broaden our understanding of objectification theory and provide new insight into the impact of self-objectification on physical performance in university women. However, like any study a few limitations should be

considered. First, in reference to generalizability, our results can only be applied to university females who do not regularly participate in sports that require good balance (e.g., hockey, figure skating) or revealing attire (e.g., figure skating, swimming). This means our findings may not be generalizable to other samples, such as men, older women, and athletes from some sports.

Given the self-report nature of the study, it is possible that social desirability and memory errors may have been an issue. Participants may have been dishonest or unable to recall certain experiences during the questionnaire portion of the study. The researcher reminded all participants to answer all questions as truthfully and honestly as possible, however it is not known for certain that they all did.

Moreover, all participants were fully debriefed on the true nature of the study and were asked to not disclose the true nature of the study to any one else at the end of their testing session. However, it is possible that some participants may have disclosed to others volunteering in the study the true nature of our study, despite our efforts to conceal the study's true intent.

The qualitative balance assessments could have also influenced how we assessed performance used during the balance tasks. It is essential to point out that some outcomes were based on the researcher's qualitative assessments. The present study did not use an inter-rater reliability check between participants. However, the researcher and her team underwent rigorous training and pilot testing to ensure she was consistent with her qualitative assessments between participants.

5.9 Future Directions

Given that all of the hypothesized psychological consequences of self-objectification were supported with the exception of interoceptive awareness, it is suggested for future researchers to focus their efforts on investigating this construct. To date, research that has investigated interoceptive awareness has been correlational in nature, and those that have used an experimental design have not used a self-objectification manipulation (e.g., swimsuit-sweater, fat-talk, etc.; Myers & Crowther, 2008). It is important for future researchers to focus their effort on looking at state interoceptive awareness, because it can provide us valuable insight into immediate responses and coping strategies for individuals who may experience a highly objectifying situation. Further, it is suggested to use practice trials to allow participants to learn to assess their heart rate. Ainley and Tsakiris (2013) used one training trial, and three testing trials to assess subjective heart rate using the Mental Tracking Method. This protocol may be a better method at gathering heart rate that does not rely on the attention or accuracy of the participant during one trial. It is important to note that gathering state levels of interoceptive awareness remains largely novel to the field of body image, and has not been attempted during a swimsuit-sweater protocol.

In addition, future studies may want to consider adding a physiological assessment to the design, such as cortisol. Perhaps studying physiological responses to self-objectification can help us better understand the effects of appearance anxiety and self-objectification on physical performance. Among a sample of healthy adults, Hauck, Carpenter, and Frank (2008) found that physiological and state anxiety increased after a

postural threat (1-leg stance at two levels using a hydraulic lift). In addition, Adkin, Campbell, Chua, and Carpenter (2008) reported an association between psychological factors (e.g., anxiety) and postural reactions during an elevated balance task. The researchers suggested that anxiety due to a perceived threat (i.e., height) could shift attention or cognitive resources, especially in situations where increased cognitive activity is demanded (Adkin et al., 2008). The present study suggests that a psychosocial threat that increases anxiety (i.e., objectification of physical appearance) may also impact balance performance.

Furthermore, perhaps future studies should consider a more task-oriented performance measure that requires a quantitative assessment with an objective indicator of performance, such as a target game (i.e., darts, free throw, or a radar gun during throwing tasks) which may provide a more valuable and immediate assessment of objective outcomes. Using objective performance indicators that are not researcher dependent (e.g., number of free throws) may provide a more valuable outcome of performance. In addition, quantifying movements (e.g., arm, legs, etc.) using motion analysis may also provide an objective performance indicator. In addition, adding a practice trial before the balance tasks might be beneficial for future studies to reduce variability between trials and reduce any first-trial effect.

Future research should investigate contentions that are not outlined in the initial conception of objectification theory (Fredrickson et al., 1998). For example, positive body image may represent a coping strategy to combat the negative psychological outcomes outlined by the theory (i.e., increased body shame, increased anxiety, decreased

peak motivational states, and decreased intrinsic motivation). Positive body image includes protective factors, such as acceptance of one's body, reframing negative incoming thoughts and feelings, engaging in physical activity, and finding and providing social support. Individuals with positive body image may be protected from some of the objectification that is common in Western society, breaking the pattern of self-objectification and its harmful outcomes.

Lastly, despite the research that has supported contentions outlined by objectification theory, to date there have been no programs targeted to reduce self-objectification. There have been interventions aimed at increasing positive body image, such as yoga-based interventions and media literacy programs for younger adults, however no programs currently in place specifically aimed at reduce experiences of self-objectification. Future research should focus on developing and assessing a program to reduce self-objectification.

5.10 Implications

5.10.1 Implications for Theory and Research. The present study provided experimental evidence to suspected contentions of objectification theory (Fredrickson et al., 1998) specifically related to interoceptive awareness, intrinsic motivation, and appearance anxiety. Outcomes such as social physique anxiety, state interoceptive awareness, and intrinsic motivation provide further understanding of the objectification process, to allow researchers to develop more effective coping strategies going forward.

This study has also provided evidence towards the challenges of measuring interoceptive awareness. There are numerous ways to define interoceptive awareness (physiological sensations vs. feelings of hunger and satiety), measurement (subjective vs. objective), and inconsistencies in the design (correlational vs. experimental) and evidence (positive vs. negative relationship) of research. The implications from this study provide evidence that there is a strong need for investigating interoceptive awareness to establish consistencies or commonalities in the literature.

To date, no studies have investigated the effects of self-objectification on intrinsic motivation during a physical performance task. Our study has demonstrated just how powerful self-objectification can be in allocating resources and disrupting attention during a physical performance task.

Furthermore, the current study provided a unique approach to examining physical performance during a self-objectification manipulation design (i.e., balance). This approach can provide opportunities for other researchers to explore the impact of self-objectification on physical performance through a relatively easy to assess performance task. The protocol and procedures from this study can serve as a guideline for future researchers to adapt and use when investigating self-objectification and physical performance.

5.10.2 Implications for Practice. Findings from this study may be of particular use for coaches and athletes in aesthetic sports who wear revealing clothing (i.e., swimsuit, sports bras, tight outfits, etc.) and are concerned about others viewing and

evaluating their appearance. This feeling of others viewing and evaluating one's appearance can be impactful during sports where one is evaluated or scored based on how their body looks or moves (e.g., figure skating). The present study has demonstrated that self-objectification can lead to the restraint of one's movements, in addition to reducing intrinsic motivation, which is essential during any activity or task to reach peak performance. It was demonstrated during this study that as women experienced self-objectification, they restricted their movements, perhaps as a way of covering or hiding their bodies. This can be a concern during sports or activities that require athletes to use the physical space around them to reach optimal performance (i.e., basketball, gymnastics, etc.). Specifically, results from the current study support contentions that when women report higher self-objectification, their actions grow timid, uncertain and hesitant, resulting in restricted bodily movement. This may be particularly important during sports. For example, athletes in sports requiring invasion of physical space (e.g., cutting off a lane in basketball, blocking a volleyball spike) or making big movements with the body (e.g., holding arms out during figure skating, pitching in baseball) in order to achieve optimal performance would be at a disadvantage if self-objectification led to restriction of movements. Coaches and athletes can adopt strategies and tactics to prevent them from experiencing self-objectification in order to ensure their physical performance or motivation is not compromised. For example, some of these strategies may be in the form of exercises, breathing techniques, and sessions engaging in mindfulness training. Mindfulness training is a reoccurring technique seen in the literature that provides individuals with the tools to cope, by focusing on their physiological state, rather than their physical state. Furthermore, another strategy may be to change uniforms or clothing

attire. For example, allowing beach volleyball players to wear shorts instead of bathing suit bottoms. Moreover, this tactic can also extend into other exercise settings.

Gym settings still remain a largely uncomfortable environment for women (Hausenblas, Brewer, & Van Raalte, 2004). A strategy that can be used to combat increases in self-objectification while in this threatening environment may be to change the clothing women wear (Prichard & Tiggemann, 2005), or by implementing a uniform (e.g., high school gym class settings) or dress code. In addition, having “women’s only” gym settings and information posted that emphasize the importance of function and/or form vs. appearance may also help to reduce self-objectification, particularly through the reduction of male gaze (Calogero, 2004; Chmelo, Hall, Miller, & Sanders, 2009; Lamarche, Gammage, & Strong, 2009). Results from this study may also be relevant to gym users who aim to perform their physical actions safely and effectively. If actions grow timid and uncertain when people self-objectify, this may lead to a greater possibility of injury during movements. In addition, experiencing self-objectification may shift attention away from performing the task properly, and towards appearance, resulting in injury. Focusing on appearance can also lead to negative psychological consequences (e.g., body shame and anxiety) that can negatively affect one’s overall well-being.

Based on our new understanding of how self-objectification (Fredrickson et al., 1998) can impact psychological states (i.e., social physique anxiety and intrinsic motivation), teachers, personal trainers, coaches, and other applicable individuals can integrate this information into their everyday teachings and/or programs. For example, teachers may want to use the findings from this study to educate girls on self-

objectification, personal trainers can emphasize the importance of form rather than physical appearance to their clients, and coaches can use these findings to teach athletes and improve their performance. By teaching individuals strategies and tactics to filter or refrain negative incoming thoughts and feelings, we can reduce the impact of self-objectification, thereby reducing symptoms of negative psychological outcomes (i.e., depression, anxiety, etc.).

5.11 Conclusion

The present study investigated the impact of self-objectification on appearance anxiety, intrinsic motivation, interoceptive awareness, and physical performance. Consistent with our hypothesis, state self-objectification resulted in greater amounts of social physique anxiety and lower amounts of intrinsic motivation. However, contrary to our hypothesis, self-objectification did not result in lower amounts of interoceptive awareness. Furthermore, consistent with our hypothesis, self-objectification resulted in restricted bodily performance (e.g., away or towards the midline of the body) for the 1-leg stand. During the 1-leg stand, individuals in the swimsuit condition exhibited smaller movements and kept arms and legs towards the midline of the body, compared to women in the sweater group who exhibited larger movements and kept arms and legs away from the midline of the body.

This was one of the first studies to take an experimental approach to induce self-objectification and report higher appearance anxiety. This study confirmed that there might be a behavioural protective action adopted by women when placed in a swimsuit (e.g., the need to cover up the body) which suggests their psychological states can affect

how they perform physical tasks. Physical performance findings suggested that when women experienced self-objectification (e.g., those in the swimsuit), they refrained from making large movements and kept arms, legs, and trunk towards the midline of the body. This evidence provides valuable knowledge for future researchers to investigate when examining self-objectification and physical performance.

Overall, the findings from this study identify negative outcomes that can arise from self-objectification, which will allow researchers and practitioners in the future to help women reduce the objectification theory experience.

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APPENDIX A: Verbal Announcement

Hi, my name is Michelle Dimas and I am a graduate student working with Dr. Kimberley Gammage in the Department of Kinesiology. We are currently recruiting for a research study that examines consumer behaviour and self-perceptions. Participation takes one visit that will last about 45-60 minutes of your time. You will be asked to complete a series of questionnaires on your beliefs and feelings about yourself and try and rate several products. Women aged 17-35, who are non-varsity athletes or who do not participate in specific sports (e.g., swimming, hockey, skating, and gymnastics), or any individual with no history of a clinically diagnosed eating disorder or neuromuscular disorder are eligible to participate. In addition, participants must be able to pass a PAR-Q, and perform standing and walking tasks independently without the use of an assistive device. Participants must also be able to read, understand, and write English fluently without the use of any translation devices. For participation, you will be offered a chance to win one of five \$20.00 Starbucks gift cards or receive a one-hour course credit for research participation to compensate you for your time. *Your decision to participate in this study or not will in no way influence your existing academic standing in Dr. Gammage's course. This study has received ethics clearance through Brock University Research Ethics Board (file #: 14-121).

*Note that this is only in the case when we are recruiting in Dr. Gammage's class. She will leave the room during the verbal announcement

APPENDIX B: Recruitment Poster

Consumer Behaviour and Self-Perceptions in University Women: **Research Participants Wanted**

Who is eligible?

- Female university students aged 17-35
- No history/diagnosis of a clinical eating disorder or neuromuscular disorder
- Varsity athletes or individuals who participate in specific sports (e.g., swimming, hockey, skating, and gymnastics) are not eligible
- Must be able to pass a physical activity clearance and perform standing and walking tasks independently
- Must be able to read, understand and write English fluently without the use of any translation devices

Participation will involve:

- One visit lasting about 45-60 minutes
- Complete questionnaires, try and evaluate several products, and perform physical tasks

A chance to win one of **five \$20.00** Starbucks gift cards or **1-hour** credit for research participation will be offered

This study has received ethics clearance through Brock University Research Ethics Board (file #: --)

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APPENDIX C: Questionnaire Package

ID# _____

Demographic Information

Please complete the following information:

Age: _____

Year in school: _____

Height: _____

Weight: _____

Major: _____

What organized/ non-organized sports (if any) do you currently play:

How often do you play these organized sports: _____

What organized/ non-organized sports (if any) have you played in the past year:

When did you play these organized sports: _____

How often did you play these organized sports: _____

What other physical activity do you engage in (e.g., yoga):

How many times per week do you engage in other physical activity: _____

How long do you engage in these physical activities in an average session: _____

Physical Activity Readiness
Questionnaire - PAR-Q
(revised 2002)

PAR-Q & YOU

(A Questionnaire for People Aged 15 to 69)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of any other reason why you should not do physical activity?

If
you
answered

YES to one or more questions

Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want — as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:

- start becoming much more physically active — begin slowly and build up gradually. This is the safest and easiest way to go.
- take part in a fitness appraisal — this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. It is also highly recommended that you have your blood pressure evaluated. If your reading is over 144/94, talk with your doctor before you start becoming much more physically active.

DELAY BECOMING MUCH MORE ACTIVE:

- if you are not feeling well because of a temporary illness such as a cold or a fever — wait until you feel better; or
- if you are or may be pregnant — talk to your doctor before you start becoming more active.

PLEASE NOTE: If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

Informed Use of the PAR-Q: The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity, and if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

No changes permitted. You are encouraged to photocopy the PAR-Q but only if you use the entire form.

NOTE: If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

"I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction."

NAME _____

SIGNATURE _____

DATE _____

SIGNATURE OF PARENT
or GUARDIAN (for participants under the age of majority) _____

WITNESS _____

Note: This physical activity clearance is valid for a maximum of 12 months from the date it is completed and becomes invalid if your condition changes so that you would answer YES to any of the seven questions.



© Canadian Society for Exercise Physiology www.csep.ca/forms

ID# _____

International Physical Activity Questionnaire-Short (IPAQ)

The questions are about your time you spent being physically active in the last 7 days. They include questions about activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport. **Please answer each question even if you do not consider yourself to be an active person.**

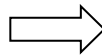
In answering the following questions,

- **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal.
- **Moderate** physical activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

1a. During the last 7 days, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

Think about ONLY those physical activities that you did for at least 10 minutes at a time.

_____ days per week



1b. How much time in total did you usually spend on one of those days during vigorous physical activities?

OR

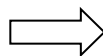
_____ hours _____ minutes

☐

None

2a. Again, think ONLY about those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles in tennis? DO NOT include walking.

_____ days per week



2b. How much time in total did you usually spend on one of those days during moderate physical activities?


OR

_____ hours _____ minutes

☐

None

3a. During the last 7 days, on how many days did you do **walk** for at least 10 minutes at a time? This includes walking at work and at home, walking to travel from place to place, and any other walking that you did solely for recreation, sport, exercise or leisure.

_____ days per week  3b. How much time in total did you usually
spend walking on one of those days?

OR

_____ **hours** _____ **minutes**

☐ **None**

ID# _____

SO-Q

I am interested in how people think about their bodies. Below are 10 different body attributes. I would like you to rank order these body attributes from that which has the **greatest impact on your physical self-concept**, to that which has the **least impact on your physical self-concept**.

Note: It does not matter how you describe yourself in terms of each attribute. For example, fitness level can have a great impact on your physical self-concept regardless of whether you consider yourself to be physically fit, not physically fit, or any level in between.

Please first read over all of the attributes. Then, record your rank by writing the letter of the attribute in the appropriate place on the scale, from most important to your physical self-concept, on down to least important.

- | | |
|--------------------------|--|
| a. physical coordination | f. physical attractiveness |
| b. health | g. energy level (e.g., stamina) |
| c. weight | h. firm/sculpted muscles |
| d. strength | i. physical fitness level |
| e. sex appeal | j. measurements (e.g., chest, waist, hips) |

LETTER OF ATTRIBUTE

MOST IMPORTANT..... _____

SECOND MOST IMPORTANT..... _____

THIRD MOST IMPORTANT..... _____

FOURTH MOST IMPORTANT..... _____

FIFTH MOST IMPORTANT..... _____

SIXTH MOST IMPORTANT..... _____

SEVENTH MOST IMPORTANT..... _____

EIGHTH MOST IMPORTANT..... _____

NINTH MOST IMPORTANT..... _____

LEAST IMPORTANT..... _____

ID# _____

Scent-Consumer Behaviour Questionnaire (S-CBQ)

1. Please rate the **first** scent by circling a number that you feel applies best:

Unpleasant	1	2	3	4	5	6	7	8	9	Pleasant
Weak	1	2	3	4	5	6	7	8	9	Strong
Unfamiliar	1	2	3	4	5	6	7	8	9	Familiar
Dislike	1	2	3	4	5	6	7	8	9	Like
Citrusy	1	2	3	4	5	6	7	8	9	Floral
Relaxing	1	2	3	4	5	6	7	8	9	Stimulating

2. Please rate the **second** scent by circling a number that you feel applies best:

Unpleasant	1	2	3	4	5	6	7	8	9	Pleasant
Weak	1	2	3	4	5	6	7	8	9	Strong
Unfamiliar	1	2	3	4	5	6	7	8	9	Familiar
Dislike	1	2	3	4	5	6	7	8	9	Like
Citrusy	1	2	3	4	5	6	7	8	9	Floral
Relaxing	1	2	3	4	5	6	7	8	9	Stimulating

3. How likely would you be to purchase the **first** scent for a gift?

Not very likely	1	2	3	4	5	6	7	8	9	Extremely likely
-----------------	---	---	---	---	---	---	---	---	---	------------------

4. How likely would you be to purchase the **second** scent for a gift?

Not very likely	1	2	3	4	5	6	7	8	9	Extremely likely
-----------------	---	---	---	---	---	---	---	---	---	------------------

5. After smelling the scents provided, please rank the scents in order using the scale and the numbers indicated on the scent bottles.

Most liked: _____

Least liked: _____

ID# _____

Clothing-Consumer Behaviour Questionnaire (C-CBQ)

Please complete the questions below using the scale provided to assess the article of clothing you are currently wearing.

5 = Strongly agree

4 = Slightly agree

3 = Moderately agree

2 = Slightly disagree

1 = Strongly disagree

- _____ 1. The article of clothing is a nice colour
- _____ 2. The article of clothing fits well
- _____ 3. The fabric is comfortable
- _____ 4. I would buy this article of clothing
- _____ 5. I would recommend this article of clothing to a friend
- _____ 6. The article of clothing is well made
- _____ 7. The article of clothing is flattering
- _____ 8. The article of clothing is fashionable
- _____ 9. The article of clothing is easy to care for

ID# _____

TWENTY STATEMENTS TEST (TST)

Imagine yourself in the article of clothing you are wearing right now. In the twenty blanks below, please make twenty different statements about yourself and your identity that complete the sentences “I am ____”. Don’t worry about evaluating the logic or importance of your answers – just write the responses as they occur to you. Complete the statements as if you were describing yourself to yourself and not to somebody else.

1. I am _____

11. I am _____

2. I am _____

12. I am _____

3. I am _____

13. I am _____

4. I am _____

14. I am _____

5. I am _____

15. I am _____

6. I am _____

16. I am _____

7. I am _____

17. I am _____

8. I am _____

18. I am _____

9. I am _____

19. I am _____

10. I am _____

20. I am _____

ID# _____

Weight and Body-Related Shame (WBR-S)

Read each item carefully and indicate how characteristic each statement is of you using the following scale:

0 = Strongly disagree

1 = Disagree

2 = Neither agree nor disagree

3 = Agree

4 = Strongly agree

	Never	Rarely	Sometimes	Often	Always
1. Right now, I feel ashamed because others can see my body.	0	1	2	3	4
2. Right now, the appearance of my body is embarrassing for me in front of others.	0	1	2	3	4
3. Right now, I would rather hide somewhere because others can see my body.	0	1	2	3	4
4. Right now, I would be ashamed of myself if others knew how much I really weighed.	0	1	2	3	4
5. Right now, I would feel embarrassed if I had to physical exert myself in front of others.	0	1	2	3	4
6. Right now, the size of my clothes is embarrassing for me.	0	1	2	3	4

ID# _____

State-Social Physique Anxiety Scale (S-SPAS)

Read each of the following statements carefully and indicate the degree to which the statement is true of you **RIGHT NOW**, according to the following scale:

- 1 = Not at all true**
2 = Slightly true
3 = Moderately true
4 = Very true
5 = Extremely true

- _____ 1. I am uptight about my physique/figure.
- _____ 2. I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.
- _____ 3. I am nervous about unattractive features of my physique/figure.
- _____ 4. Right now, I feel apprehensive about my physique/figure.
- _____ 5. I am comfortable with how fit my body appears to others.
- _____ 6. I am uncomfortable knowing others are evaluating my physique/figure.
- _____ 7. I am shy because I am displaying my physique/figure to others.
- _____ 8. I feel relaxed even though it is obvious that others are looking at my physique/figure.
- _____ 9. Sitting here in my shorts and t-shirt, I feel nervous about the shape of my body.

ID# _____

Private Body Consciousness Scale (PBCS)

Read each item carefully and indicate how characteristic each statement is of you using the following scale:

1-----2-----3-----4-----5

**Extremely
uncharacteristic of me**

**Extremely
characteristic
of me**

- _____ 1. I am sensitive to internal bodily sensations.
- _____ 2. I know immediately when my mouth or throat gets dry.
- _____ 3. I can often feel my heart beating.
- _____ 4. I am quick to sense the hunger contractions of my stomach.
- _____ 5. I'm very aware of changes in my body temperature.

ID# _____

Movement-Consumer Behaviour Questionnaire (M-CBQ)

Please complete the questions below using the scale provided to assess the movement of article of clothing you are currently wearing. This questionnaire will help us assess how wearing this article of clothing can hold up during daily activities.

5 = Strongly agree**4 = Slightly agree****3 = Moderately agree****2 = Slightly disagree****1 = Strongly disagree**

- _____ 1. The article of clothing was flexible with my movements
- _____ 2. The article of clothing was comfortable during movements
- _____ 3. The material was durable during my movements
- _____ 4. I would buy this article of clothing because of how it holds up during movement
- _____ 5. I would recommend this article of clothing to a friend
- _____ 6. The article of clothing moved well during tasks
- _____ 7. The article of clothing didn't bunch up while I moved
- _____ 8. The clothing allowed me to move freely

ID# _____

Intrinsic Motivation Inventory (IMI)

For each of the following statements, please indicate how true it is for you, using the following scale:

1-----2-----3-----4-----5-----6-----7

Not at all true **Somewhat true**

Very true

- _____ 1. I enjoyed doing this activity very much
- _____ 2. This activity was fun to do.
- _____ 3. I thought this was a boring activity.
- _____ 4. This activity did not hold my attention at all.
- _____ 5. I would describe this activity as very interesting.
- _____ 6. I thought this activity was quite enjoyable.
- _____ 7. While I was doing this activity, I was thinking about how much I enjoyed it.
- _____ 8. I put a lot of effort into this activity.
- _____ 9. I didn't try very hard to do well at this activity.
- _____ 10. I tried very hard on this activity.
- _____ 11. It was important to me to do well at this task.
- _____ 12. I didn't put much energy into this.

ID# _____

Balance Performance Measures – for researcher ONLY

Circle one of the following:

Sweater group**OR****Swimsuit group**

Perceived heart rate: _____

Actual heart rate: _____

Height (cm): _____

Weight (Kg): _____

Order of blocks:

_____ Tandem walk

_____ Functional Reach

_____ 1 Leg stand

<u>1 Leg Stand</u>		<u>ARMS</u>	<u>TRUNK</u>	<u>FREE LEG</u>
<u>Trial #1</u> R or L	Time: _____	____ Towards midline ____ Away from midline ____ Crossed	____ Forward flexion ____ Upright	____ Towards midline ____ Away from midline
<u>Trial #2</u> R or L	Time: _____	____ Towards midline ____ Away from midline ____ Crossed	____ Forward flexion ____ Upright	____ Towards midline ____ Away from midline
<u>Trial #3</u> R or L	Time: _____	____ Towards midline ____ Away from midline ____ Crossed	____ Forward flexion ____ Upright	____ Towards midline ____ Away from midline

<u>Functional Reach</u>	<u>Distance</u>
Trial 1	<u>CM:</u> _____
Trial 2	<u>CM:</u> _____
Trial 3	<u>CM:</u> _____

<u>Tandem Walk</u>	<u>ARMS</u>	<u>TRUNK</u>	<u>LEGS</u>
<u>Trial #1</u> Deviate errors: _____ Tandem errors: _____ Time: _____	_____ Towards midline _____ Away from midline _____ Crossed	_____ Forward flexion _____ Upright	_____ Towards midline _____ Away from midline
<u>Trial #2</u> Deviate errors: _____ Tandem errors: _____ Time: _____	_____ Towards midline _____ Away from midline _____ Crossed	_____ Forward flexion _____ Upright	_____ Towards midline _____ Away from midline
<u>Trial #3</u> Deviate errors: _____ Tandem errors: _____ Time: _____	_____ Towards midline _____ Away from midline _____ Crossed	_____ Forward flexion _____ Upright	_____ Towards midline _____ Away from midline

APPENDIX D: Physical Tasks

Functional Reach task:



1-leg Stand task:



Tandem Walk task:



APPENDIX E: Clothing

Sweater Group clothing:



Swimsuit Group clothing:



APPENDIX F: Letter of Invitation

Letter of Invitation

Project Title: Consumer Behaviour and Self-Perceptions in University Women
Principal Student Investigator: Michelle Dimas, BPHE, Faculty of Applied Health Sciences,
Brock University
Principal Investigator: Dr. Kimberley Gammage, Associate Professor, Department of
Kinesiology, Brock University

I, Dr. Kimberley Gammage, from the Department of Kinesiology, Brock University, invite you to participate in a research project entitled *Consumer Behaviour and Self-perceptions in University Women*.

The purpose of this study is to examine how self-perceptions are related to consumer behaviour and product preferences in university women.

Participation will take approximately 45-60 minutes. Women who are varsity athletes or who participate in specific sports (i.e., swimming, hockey, skating, and gymnastics), or any individual with a history of a clinical diagnosed eating disorder or neuromuscular disorder are not eligible to participate. In addition, participants must be able to pass a PAR-Q. All participants must be able to walk and stand independently, without the use of an assistive device. Participants must also be able to read, understand, and write English fluently without the use of any translation devices. You will be asked to try and rate several products on a variety of characteristics, and to complete a series of questionnaires and a series of physical tasks in a private laboratory setting. To thank-you for your participation and to compensate you for your time, we will offer either a chance to win one of five \$20.00 Starbucks gift-cards or a one-hour course credit for research participation. Participants who choose the chance to win one of five \$20.00 Starbucks gift cards will have their names entered into a draw that will take place once data collection is complete; the odds of winning are contingent on the number of participants who are entered into the draw. If you are interested in participating, please contact Michelle Dimas (see email address below) to set up a day and time to complete the study.

You may experience some discomfort due to the sensitive or personal nature of the questions being asked, as they refer to your beliefs about yourself; in this event, contact information for Dr. Gammage, student health services (905-688-5550 ext.3243, <http://www.brocku.ca/healthservices>), the Niagara Distress Center (905-688-3711, www.distresscentreniagara.com/), and www.211Niagara.ca is provided. You also may experience some physical risk due to the series of physical tasks that will be performed.

If you have any pertinent questions about your rights as a research participant, please contact the Brock University Research Ethics Officer (905-688-5550 ext. 3035, reb@brocku.ca)

If you have any questions, please feel free to contact me.

Thank you

Principal Student Investigator:
Michelle Dimas, BPHE
Faculty of Applied Health Sciences
Brock University
md08tf@brocku.ca

Principal Investigator:
Dr. Kimberley Gammage,
Associate Professor
Department of Kinesiology
Brock University
905-688-5550 (x3772)
kgammage@brocku.ca

This study has been reviewed and received ethics clearance through Brock University Research

Ethics Board (file # 14-121)

APPENDIX G: Informed Consent

Informed Consent

Date: Winter 2015
Project Title: Consumer Behaviour and Self-Perceptions in University Women

Principal Student Investigator:
Michelle Dimas, BPHE
Faculty of Applied Health Sciences
Brock University
md08tf@brocku.ca

Principal Investigator:
Dr. Kimberley Gammage,
Associate Professor
Department of Kinesiology
Brock University
905-688-5550 (x3772)
kgammage@brocku.ca

INVITATION

As a participant, you will be asked to complete a series of questionnaires on your beliefs and feelings about yourself, try and rate a scent and an article of clothing, and perform a series of physical tasks. Women who are varsity athletes or who participate in specific sports (i.e., swimming, hockey, skating, and gymnastics), or any individual with a history of a clinical diagnosed eating disorder or neuromuscular disorder are not eligible to participate. In addition, participants must be able to pass a PAR-Q. All participants must be able to walk and stand independently, without the use of an assistive device. Participants must also be able to read, understand, and write English fluently without the use of any translation devices. Participation will take approximately 45-60 minutes of your time and is done in a private laboratory setting. To thank you for your participation and to compensate you for your time, we will offer either a chance to win one of five \$20.00 Starbucks gift-cards or receive a one-hour course credit for research participation. Participants who choose the chance to win one of five \$20.00 Starbucks gift cards will have their names entered into a draw that will take place once data collection is complete; the odds of winning are contingent on the number of participants who are entered into the draw. We will offer a chance to win one of five \$20.00 Starbucks gift cards or a one-hour course credit for research participation to you for completing the study to compensate you for your time.

WHAT'S INVOLVED

As a participant, you will be asked to complete a series of questionnaires on your beliefs and feelings about yourself, try and rate several products, and perform a series of physical tasks. Participation will take approximately 45-60 minutes of your time and is done in a private laboratory setting. We will offer a chance to win one of five \$20.00 Starbucks gift cards or a one-hour course credit for research participation to you for completing the study to compensate you for your time.

POTENTIAL BENEFITS AND RISKS

Your participation will help examine how beliefs about yourself are related to your perceptions of specific products and your consumer behaviours. You may experience some discomfort due to the sensitive or personal nature of the questions being asked, as they refer to beliefs about yourself; in this event, contact information for Dr. Kimberley Gammage (see above), student health services (905-688-5550 ext.3243, <http://www.brocku.ca/healthservices>), the Niagara Distress Center (905-688-3711, www.distresscentreniagara.com/), and www.211Niagara.ca is provided. There is a risk of physical injury due to the nature of some of the tasks you will be performing. You will be spotted at all times throughout the tasks. Further, these tasks are commonly used in our studies.

CONFIDENTIALITY/ANONYMITY

All data is anonymous. Please do not place your name or any identifying information on the questionnaires. Any information that arises from participants will be treated with confidentiality. You will not be identified individually in any way in written reports of this research. Your name will not be included or, in any other way, associated with the data collected in the study. Data collected during this study will be stored in a locked filing cabinet of a research laboratory of Dr. Kimberley Gammage at Brock University and will be destroyed five years following publication of the results. Access to this data will be restricted to the principal and student principal investigator and the research team only.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time and may do so without any penalty or loss of benefits to which you are entitled. After your participation is complete, it will not be possible to withdraw, as your data will not be identifiable.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. No identifying information will be included. Feedback about this study will be available. At your request you may receive a summary of results by completing the request for feedback from provided, or by contacting the principal student investigator or faculty supervisor by e-mail.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact the Faculty Supervisor or Principal Student Investigator using the contact information provided above. This study has been reviewed and received ethics clearance through the Brock University Research Ethics Board (file # 14-121) If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at 905-688-5550 ext. 3035, reb@brocku.ca. Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM

I agree to participate in this study described above. I have made this decision based on the information I have read in the Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____ (please print) Signature: _____

Date: _____ Form of Compensation: _____

APPENDIX F: Debriefing and Re-Consent Form**Informed Consent Form**

Project Title: Consumer Behaviour and Self-Perceptions in University Women

Principal Student Investigator: Michelle Dimas, BPHE, Faculty of Applied Health Sciences, Brock University

Principal Investigator: Dr. Kimberley Gammage, Associate Professor, Department of Kinesiology, Brock University

We would like to inform you that we used deception with respect to the purpose of this study. The true purpose of this study was to look at the effect of self-objectification (how women view themselves from a third person perspective, as objects to be used by others) on several outcomes: anxiety, body shame, interoceptive awareness, and intrinsic motivation. Self-objectification refers to viewing the body from a third person perspective. When people self-objectify they place a lot of importance on their physical appearance, and continually monitor their physical appearance. The study examined if self-objectification can increase anxiety, body shame, interoceptive awareness (the ability to accurately monitor the body's physiological states, e.g., heart rate), and intrinsic motivation, and in turn influence performance on physical tasks. We are particularly interested in finding if individuals who experienced greater amounts of self-objectification performed more poorly on the balance tasks. Participants were randomly assigned to either a swimsuit or sweater condition, completed body image questionnaires and performed three balance tasks. To ensure your responses were actual responses, the true purpose of the study and the nature of the study were initially not provided (or were provided in a manner that misrepresented the real purpose of the study). Specifically, we did not inform you about the fact there were two groups, one of which tried on a bathing suit and one of which tried on a sweater. If you had known about the two groups or the true purpose of the study, it could have influenced how you answered many of the questions. In addition, having full knowledge of the true purpose of the study may have influenced the way in which you performed on the balance tasks.

Re-Consent:

I was informed that deception was used in this study, and that having full knowledge of the true purpose and nature of the study may have influenced the way in which I completed the questionnaires and performed on the balance tasks. However, I am now informed of the true purpose of this study. In addition, I have had the opportunity to ask questions about this and to receive acceptable answers to my questions. I have been asked to give permission to the researchers to use my data in their study, and agree to this request. During the debriefing session, I was given an explanation as to why the researchers had to disguise the true purpose of this study. Contact information for Dr. Gammage, student health services (905-688-5550 ext.3243, <http://www.brocku.ca/healthservices>), the Niagara Distress Center (905-688-3711, www.distresscentreniagara.com/), and www.211Niagara.ca is provided. Information regarding body image concerns can be found at the following official websites: www.nedic.ca and www.womenshealth.gov/. I am aware I may contact Brock University's Research Ethics Office regarding my rights as a research participant (905-688-5550 ext. 3035 or reb@brocku.ca).

Date: _____

Participant name (please print): _____

Participant signature: _____

Principal Student Investigator:
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